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CANADIANA
OCT 6 1986

BEEF'N BACON

North West Region

Alberta
AGRICULTURE

OCTOBER 1986 VOL. 2, NO. 1

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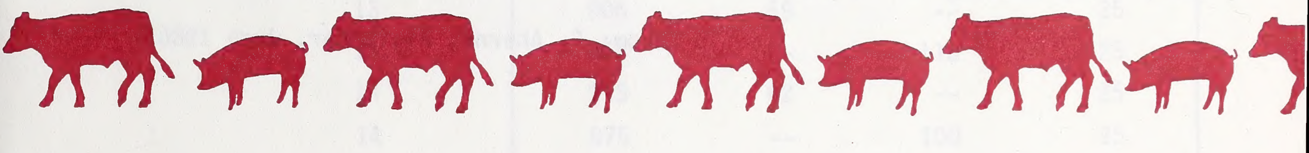

INTRODUCTION

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More information on all articles is available by contacting your District Agriculture Office or the editors.

Editors: Marvin Salomons, Regional Swine Specialist
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SWINE

PREVENTING PIG LAMENESS

Cartilage damage in the knee and elbow joints of pigs is the most common cause of lameness. In almost every case, joint damage can be traced to mechanical stresses such as those resulting from pigs fighting, slippery or abrasive floors, and dropping or throwing pigs.

In an effort to reduce the incidence of lameness in pigs, producers should take appropriate steps to prevent situations where mechanical damage to joints could occur:

- minimize mixing of pigs.
- don't drop or throw pigs.
- select breeding replacements with good skeletal structure and body conformation.
- avoid solid or slotted floors that cause foot lesions.
- feed adequate amounts of properly balanced diets.
- provide adequate pen space, preferably in long, narrow pens which increase the amount of exercise the pigs get.
- if transporting potential breeding stock, use adequate loading and unloading facilities and provide bedding in the truck.

(from: F. Aherne, Pigletter, June 1986)

FORMULAS FOR GROWER-FINISHER RATIONS

Testing cereal grains before using them in swine feeds not only means improvements in pig performance but also potential savings in feed costs. Hog producers using a variety of barley sources of varying protein content (9-14%) can use the following table to quickly formulate grower-finisher rations. All rations are based on using 46.5% soybean meal, 36% canola meal, a grower-finisher vitamin-mineral premix and formulated to meet at least the following nutrient requirements:

Growers - 0.72% lysine, 0.7% calcium, 0.6% phosphorus
Finishers - 0.62% lysine, 0.6% calcium, 0.5% phosphorus

	PROTEIN CONTENT OF BARLEY USED (%)	AMOUNT/TONNE (kg)			
		Barley	Soybean Meal	Canola Meal	Premix
GROWER RATIONS	9	825	145	--	30
	9	792	89	89	30
	10	837	133	--	30
	10	806	82	82	30
	11	845	125	--	30
	11	818	76	76	30
	12	857	113	--	30
	12	830	70	70	30
	13	865	110	--	30
	13	840	65	65	30
	14	870	100	--	30
	14	846	62	62	30
FINISHER RATIONS	9	865	110	--	25
	9	805	--	170	25
	10	877	98	--	25
	10	820	--	155	25
	11	887	88	--	25
	11	835	--	140	25
	12	900	75	--	25
	12	855	--	120	25
	13	906	69	--	25
	13	865	--	110	25
	14	913	62	--	25
	14	875	--	100	25

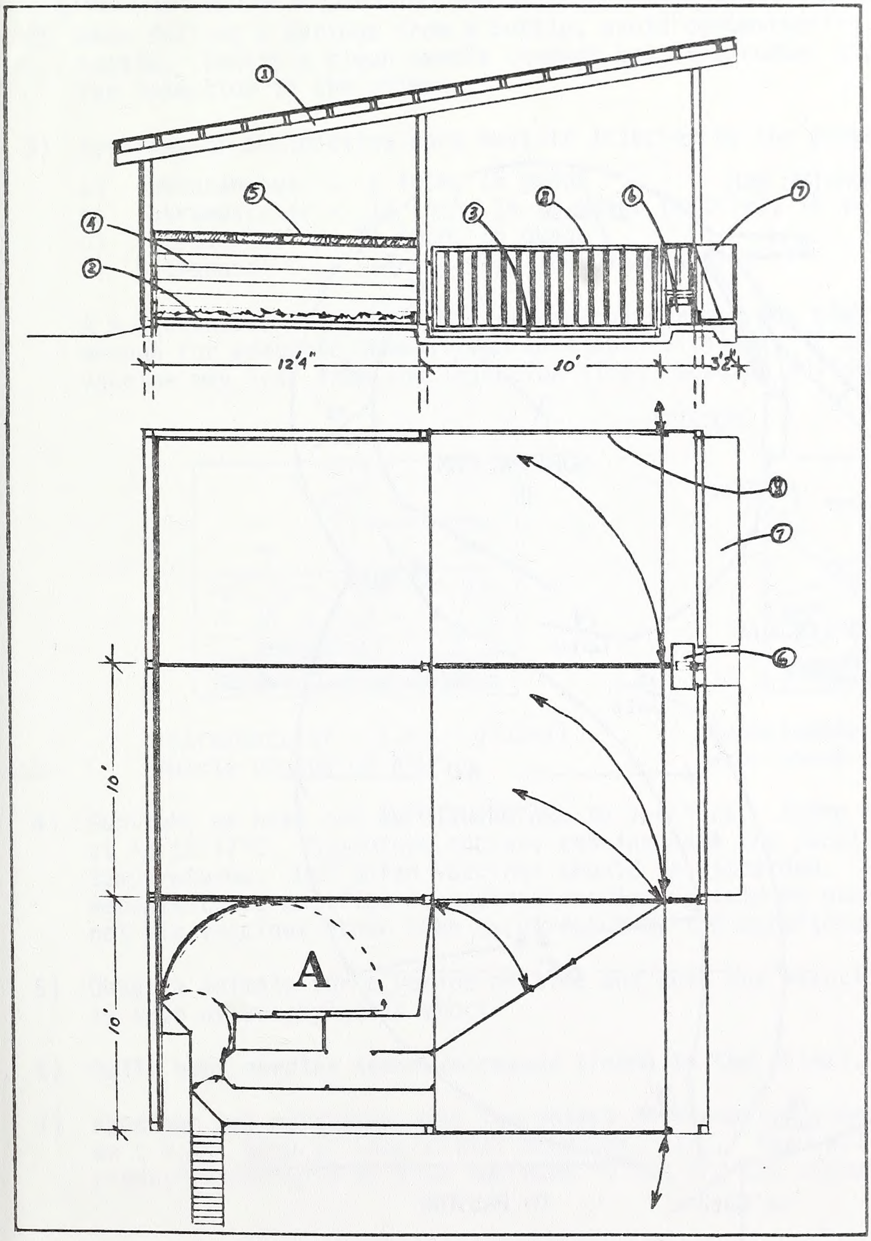
BREEDING HERD TERMS

Swine producers use a variety of terms to describe the reproductive performance of sows and gilts. Often confusing, the terms are important tools in diagnosing herd problems.

OVULATION RATE:	The number of eggs released from the ovaries during estrus is the ovulation rate. Normal range - 14 to 20 eggs shed Attainable goal - 25+ eggs shed
FERTILIZATION RATE:	The fertilization rate refers to the number of eggs actually fertilized. Proper timing of service is an important factor. Normal range - 12 to 15 eggs Attainable goal - 17+ eggs
CONCEPTION RATE:	Conception rate refers to the number of sows that have started gestation with the migration and implantation of the fertilized eggs in the walls of the uterus. A sow is presumed to have conceived if she does not return to estrus within 21 days after service and/or shows a positive pregnancy diagnosis. Normal range - 80 to 90% Attainable goal - 95%
FARROWING RATE:	Farrowing rate refers to the number of sows that farrow to a given number of breedings. $\frac{\text{total number of farrowings X 100}}{\text{total number of breedings}} = \text{farrowing rate (\%)}$ Farrowing rate reflects the combined effects of performance during mating, conception and gestation (provides vital information on potential pig flow and output). Normal range - 70 - 85% Attainable goal - 90%
FARROWING INDEX:	The number of farrowings taking place in 365 days divided by the average number of sows in the herd during that period is termed the herd farrowing index. Farrowing indexes (litters/sow/year) can pinpoint increases in empty days. Normal range - 1.8 - 2.1 Attainable goal - 2.4
FARROWING INTERVAL:	The farrowing interval refers to the number of days a sow takes between successive farrowings. Normal range (4 week weaning) - 153 - 157 days Attainable goal (4 week weaning) - 150 days

SEMI-CONFINEMENT FINISHING FACILITY

This inexpensive semi-confinement facility for growing-finishing pigs offers complete housing under one roof. The structure adapted from a cattle pole-shed plan provides a warm kenneled sleeping area. Hinged gates lock pigs in the sleeping area for easy manure removal. An optional weighing, sorting and load-out area (see A) will be detailed in an upcoming issue.



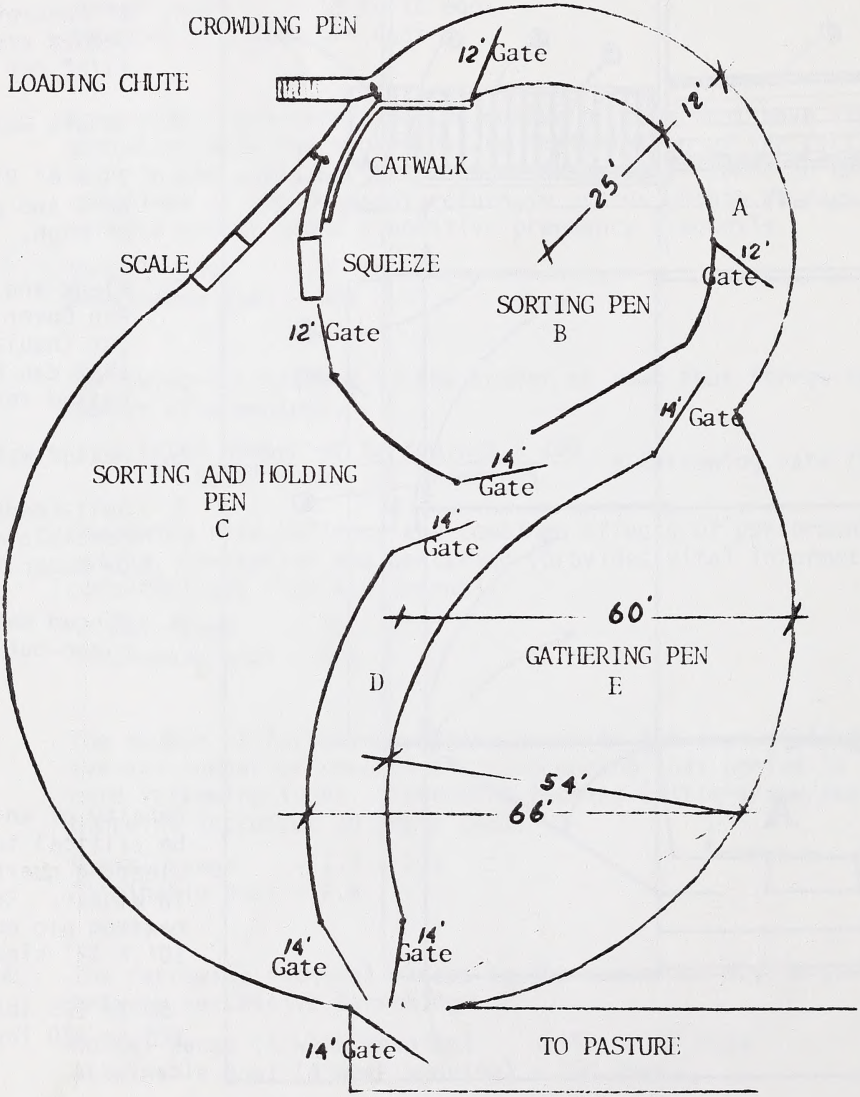
1. Single Sloped Open Front Shed CPS Plan 8162. Use 6" X 6" square timbers.
2. 4" Concrete Floor: Bedded area sloped. (1/8" per Foot)
3. Manure Gutter 8" deep.
4. 2" X 8" Planking; back wall and pen partitions 4' high.
5. Plank and Straw Bale Pen Cover for Winter (or insulated panels that can be removed or raised for access.)
6. Heated Waterer.
7. Self-Feeders filled from portable mixer grinder or auger from feed bin.
8. Hinged Gates for manure clean-out.

Density of animals appears to be critical to ensure clean sleeping quarters especially in winter. Recommended maximum pig numbers for each 10' X 12' sleeping area are:

60 to 125 lbs - 40 pigs
125 to 220 lbs - 20 pigs

CORRAL PLAN

Here is a cow-calf corral design that is entirely circular or curved for alleys, chutes, holding pens, sorting pen or gathering pen. This design has been built at the Pembina Forage Association cow-calf pasture north of Westlock. It allows for a 2 way sort from the squeeze and a 4 way sort back from section A to sections B, C, D and E. This design also minimizes the amount of extra labor required to work cattle. Important features of a good working plan are curved alleys and chutes, solid sides from the crowding pen forward and hinged gates. Good facilities remove much of the frustration which inevitably occurs with stubborn animals.



PROPER USE OF SYRINGE

The success or failure of a vaccination program may depend on the handling of the syringe and needle. Here are some pointers to ensure good results:

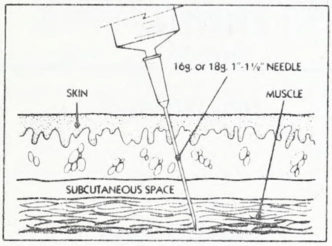
1) Syringes should NOT be cleaned with alcohol, iodine or other disinfectants. Syringes and needles should be disassembled, wiped clean, immersed in boiling water for 15 minutes, dried and then reassembled. Contaminated syringes will lessen the effectiveness of the vaccine.

2) When filling a syringe from a bottle, avoid contaminating the remaining contents of the bottle. Insert a clean needle through bottle's rubber stopper and use a second needle for injection in the animal.

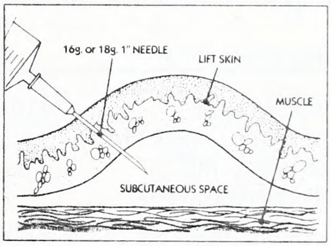
3) Vaccines or antibiotics work best if injected to the proper site. For example:

   a) subcutaneous - ½ inch, 16 guage
   b) intramuscular - 1½ inch, 14-16 guage (cattle), 18 guage (calves)
   c) intradermal - ½ inch, 25 guage
   d) intranasal - aerosal applicator (cannula)

   A subcutaneous vaccine given intramuscularly may not stay at the injection site long enough for adequate immunity to develop. Similarly if too large a needle is used, vaccine may leak from the injection site, reducing buildup of immunity.



Intramuscular - i.e. - gluteal muscle on top of hip



Subcutaneous - i.e. - upper neck area where skin is loose

4) Sunlight or heat can be disasterous to vaccines. Store the vaccine in a refrigerator at +2 to +7°C. Styrofoam coolers can insulate the vaccine from either hot or freezing temperatures. Out dated vaccines should be discarded. Potency tapers off with age. Reconstituted modified-live virus vaccines should be used within 1 hour of mixing. Do not mix vaccines other than as directed by the manufacturer.

5) Observe animals for a period of time and note any reactions. Keep epinephrine available in case of anaphylactic shock.

6) Dull, bent needles cause increased trauma to the animal. Replace with new needles.

7) Vaccines are purchased with the intent of protecting the animal against such diseases as I.B.R., scours, clostridial diseases, etc.. Read all information provided with the product especially to find how much to use and the correct method of use.

IMPLANTING = INCREASED RETURN

Growth implants have been thoroughly tested under Alberta pasture and feedlot conditions and found to be effective. Based on a 10 - 15% improvement in performance growth implants will return from $12 to $18 per $1.00 invested. This assumes a $90/cwt sale price and 2.0 lb/day gain. The following points and table may be helpful:

1) Take care to implant properly, according to manufacturers directions. Extra time and care at time of implanting will help ensure success of the product.

2) Avoid implanting replacement heifers. Several trials have shown reduced conception rates for previously implanted heifers.

3) The animal must be sufficiently restrained. Although implanting is simple and fast, a squeeze with headgate makes the job easier and safer.

4) Reimplanting after 100 - 120 days from the initial implanting will result in continued improvements in gain and feed efficiency.

5) Growth implants in combination with feed additives such as Rumensin or Bovatec are significantly more effective than either product alone for improved gain and feed efficiency.

Name	Restrictions	Performance* ADG	FCE	Effective Period	Withdrawal Time
Ralgro	for steers, heifers, suckling calves, NOT breeding stock	+10-15%	+8-10%	100-120 days	65 days
Synovex S	steers over 400 lbs.	+10-15%	+8-10%	100-120 days	none
Synovex H	heifers over 400 lbs, NOT for breeding stock	+ 8-12%	+8-10%	100-120 days	none
Synovex C	suckling calves 45 days & older	+ 5-6%	+3-5%	to weaning	none
STEER-oid	steers over 400 lbs	+10-15%	+8-10%	100-120 days	none
HEIFER-oid	heifers over 400 lbs	+ 8-12%	+8-10%	100-120 days	none
Compudose	steers over 600 lbs	+10-15%	+8-10%	200 days	none

* ADG - average daily gain FCE - feed conversion efficiency

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INTRODUCTION

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BEEF

THIRD TRIMESTER IS A CRITICAL PERIOD

During the first 45 days following conception, the embryo multiplies and differentiates into various body parts including nervous system, internal organs, skeleton and muscles. The fetus is very small at this time. Even at day 198 or the end of the second trimester the fetus weighs only about 15 pounds. In the last 94 days of gestation, the fetus grows from 15 pounds to 80 or more pounds at birth. Amazingly the fetus is growing at 0.6 to 0.7 lbs/day throughout the third trimester.

This increased growth requires an increase in nutritional requirements. Saving the best quality roughage to late winter, increasing energy intake especially in the last 6 weeks of gestation or reducing competition at the feed bunk can be cost effective methods of managing this critical period.

Reproductive Cycle of Beef Cow:

Day 1	May 23	bred and conceived
94	Aug. 25	end of first trimester
198	Dec. 7	end of second trimester
282	March 1	calving date
365	May 22	end of post calving period
482	Sept. 17	200 day age of calf

Management decisions one year will carry over into future years. For example, the 1987 calvin dates have been influenced by previous years decisions. Management strategies are more effectively applied to all cows if the cows are at a similar reproductive stage. A strategy which shortens the breeding period is usually desirable economically.

AVOIDING POST-WEANING GROWTH CHECKS

Between weaning and 20 kgs, pigs should gain at least 400 g per day. To achieve maximum post-weaning growth a strict weaning day checklist must be followed.

THE ENVIRONMENT:

DO NOT:	BUT DO:
1. Assume the pig has the correct environmental temperature.	a) Monitor temperature at pig level. Pigs 5-6 kg (3 weeks of age should be kept in temperatures of 29-30°C). b) Set temperature for the smallest pig in the pen. c) Check lying patterns of pigs.
2. Assume sleeping areas are warm, dry and draft-free.	a) Check for air movements greater than 13 m per minute. Reduce with solid partitions and overlays. b) Make sure pens are clean, disinfected and dry before receiving new pigs. c) Practice all-in, all-out management. d) Provide comfort boards.

THE PENNING SYSTEM:

DO NOT:	BUT DO:
1. Overcrowd the pens.	a) Make sure pigs (up to 20 kg) have 0.3 m² of floor space each. b) Stock no more than 20 pigs per group.
2. Mix weights within a pen.	a) Keep pigs (6-7 kg weight) within a weight range of 2 kg. b) Always put the smallest pigs together. c) Try to wean even-sized litters so they can be penned together.

THE FEEDING SYSTEM:

DO NOT:	BUT DO:
1. Overload the gut with excess feed.	a) Feed a good palatable ration (at least 92% digestibility). b) Feed little and often until ad-lib feeding is achieved (by Day 3).
2. Assume pigs are eating what you think.	a) Check for adequate feeder space (2-3 pigs per feeder hole) b) Make sure feed is fresh and troughs are clean.
3. Assume water supply is satisfactory.	a) Ensure water bowls and drinkers are clean. b) Provide one waterer for every 10 pigs. c) Check flow rates (at least 300 ml per minute)

MANAGING THE HERD BOAR

Good boar management is a vital part of any successful swine operation. Pig unit managers must ensure that boars are at optimum fertility in order that they are able to settle a high percentage of sows with large litters in as short a time as possible.

ADEQUATE POWER TO DO THE JOB

Whenever possible, sows should be served at least twice if not three times during each heat period. Breeding twice will increase conception rates by 10% and litter size by one pig. Given this program, adequate boar power should be one boar to every sow weaned each week. A unit weaning 5 sows per week would therefore require 5 boars. On a continuous farrowing system one boar to every 18 sows is an optimum ratio.

	Suggested Breeding Frequency	
	Young Boar (8-12 months)	Mature Boar (over 12 months)
Per Day	2	3
Per Week	8	12

POINTS TO REMEMBER

- Purchase new boars at least 60 days (5-6 months of age) before they are needed. Isolate them from the rest of the herd for at least 30 days and don't use them until they are sexually mature at 8-9 months of age.
- Prepubertal boars should be housed in groups. Post-pubertal boars should be housed adjacent to the sow.
- For optimum sperm fertility, during hot weather breed sows early in the morning, late in the evening, and if possible again the next morning.
- Boars with high courting activity produce larger litters.
- For each day a boar is rested between services (up to 7 days) litter size increases by 0.1 piglets.
- Opt for hand-mating whenever possible. Typical conception rates are:

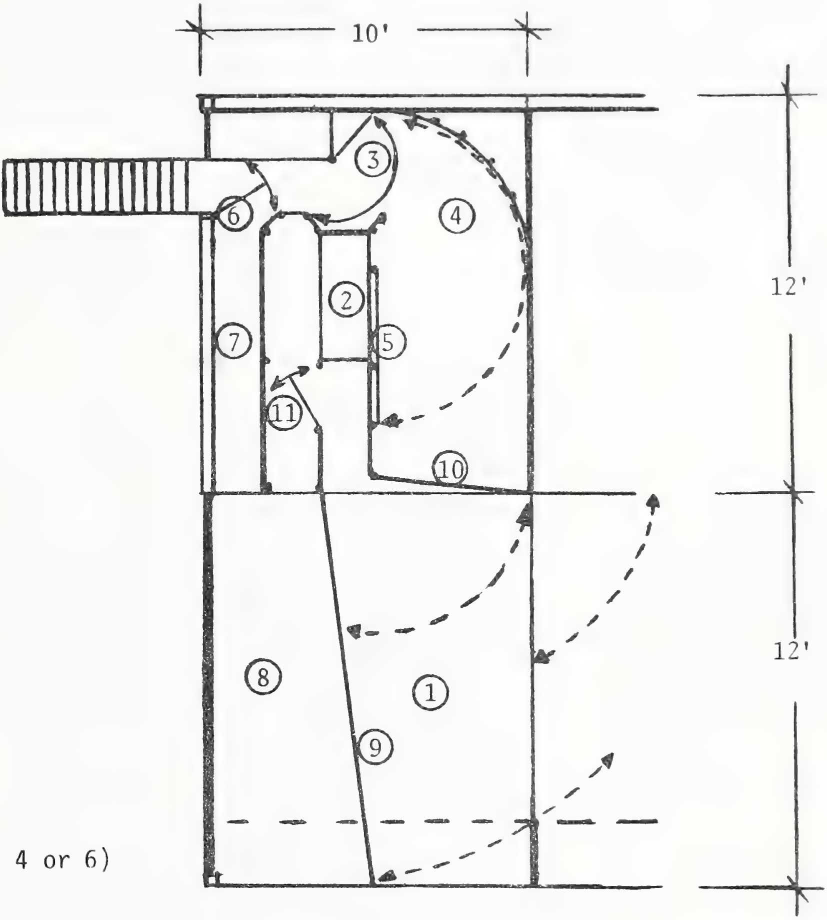
	Pen Mating	Hand-Mating
Inside breeding	80 - 85%	90 - 95%
Outside breeding	75 - 80%	85 - 90%

BOAR RECORDS

It is essential that boars are used in rotation. In larger units in particular, the active, easy to handle and accessible boar is often over-used. A simple recording system can let you know at a glance how much boars are being used. A chalk-board by each boar pen can be used to quickly mark each time a particular boar is used during that week.

SEMI-CONFINEMENT HANDLING SYSTEM

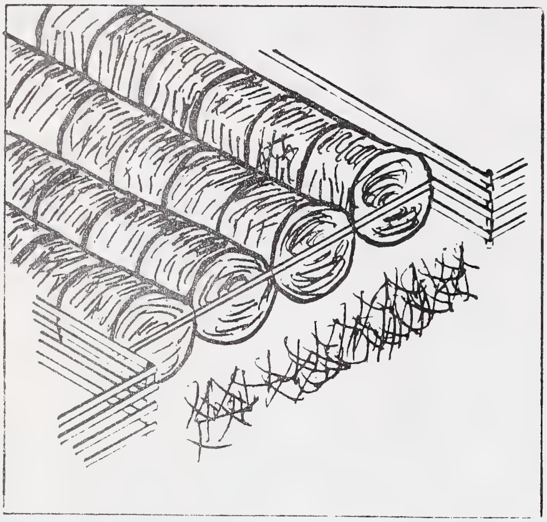
This swine handling system offers a sorting, weighing and load-out area. The system can be added to a semi-confinement finishing facility as illustrated in the October, 1986 issue (page 5) of Beef'n'Bacon. This plan could also be adopted as a 10 foot addition to the end of most confinement swine barns.



1. Gathering Pen
2. Weigh Scale
3. 2' Sorting Gate (into 4 or 6)
4. Crowding Pen
5. 4'6" Crowding Gate
6. 2' Cutting Gate (into 6 or loading chute)
7. Return Alley (16" wide)
8. Holding Pen
9. 12' Gate with 2' Man Gate for easy access to 1.
10. 4' 6" Sorting Gate
11. 2' Man Gate for access to back of scale.

TWO-WIRE FEEDING OF GIANT BALES

CANADA PLAN Q-1641

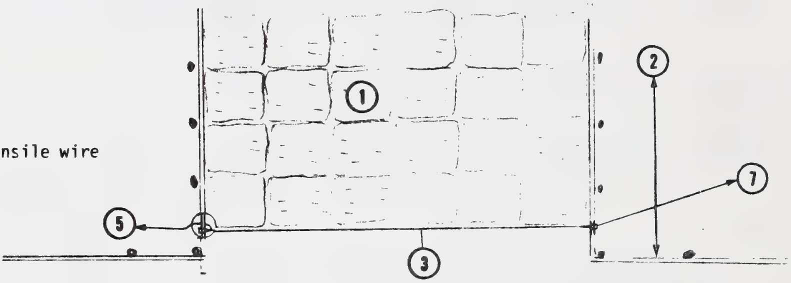


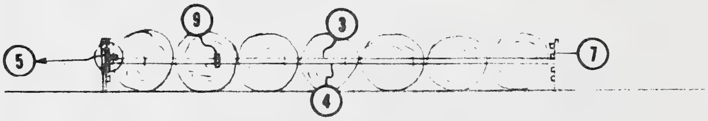
There are various methods of feeding large round bales or hay stacks by electricity. Here is a design using two strands of 12 guage hi tensile wire spaced 6 inches apart. The top wire is electrically charged and the bottom wire is the ground. Cattle must touch both wires before being shocked. Some advantages of feeding by electricity are:

1. there is no need to start a tractor daily
2. feed waste can be minimized by having cattle clean up hay before moving wires
3. the feed yard can be filled when the producer has extra time available
4. it minimizes labor requirements and reduces costs.

free choice - number head X 6 to 8 in./cow

limited - number head X 21 to 24 in./cow



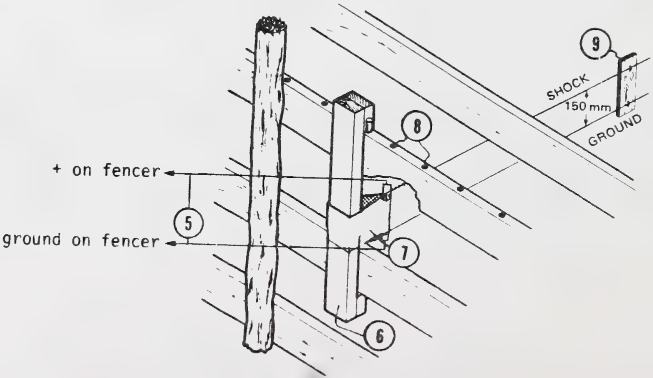


1. large round bales
2. to accommodate desired feed supply
3. electrically charged, uninsulated wire
4. ground wire - attach to ground terminal on fencer

3, 4: 12 guage hi tensile wire

5. to solid state fence charger
6. 2 x 4 inch electric wire supporting block, to support wire @ 40 inch height
7. wire tension device cut from rubber inner tube (both ends) or adjustable winch or come along if side fences not parallel
8. adjustment holes in fence plank - approximately 4 inches apart
9. plywood insulated spacer (or drilled holes in 1" x 8" piece of water hose

CAUTION: Do not place large round bales close together until after rainy weather has passed.



BREAKEVEN PRICES FOR CALVES

A recent survey showed that for most feeder cattle or calves, a profit or loss was determined the day the animals were bought. Knowing how much you can pay for cattle is the major financial factor. The following chart can be used to quickly calculate either break-even purchase price, breakeven sale price or required cost per lb of gain.

Note: Know your cost of gain. The cost of gain used in the examples may be either high or low for your operation. Cost of gain is comprised of both fixed costs (taxes, facility costs) and variable costs (feed, interest on cattle, vet, medicine, etc). The day to day buying decision may be based upon the variable costs, while long run investment or expansion decisions should be based upon total cost.

Using The Chart

1. Calculate your cost/lb gain and mark on chart.
2. Pick scale on right that shows weight of cattle you will be buying.
3. Mark on this scale what you estimate cattle will cost.
4. Draw a line to connect the 2 points.
5. Breakeven sale price is where line crosses the scale showing your sale weight.
6. Can use chart in reverse order to calculate break-even purchase price or required cost/lb of gain.

Example #A:

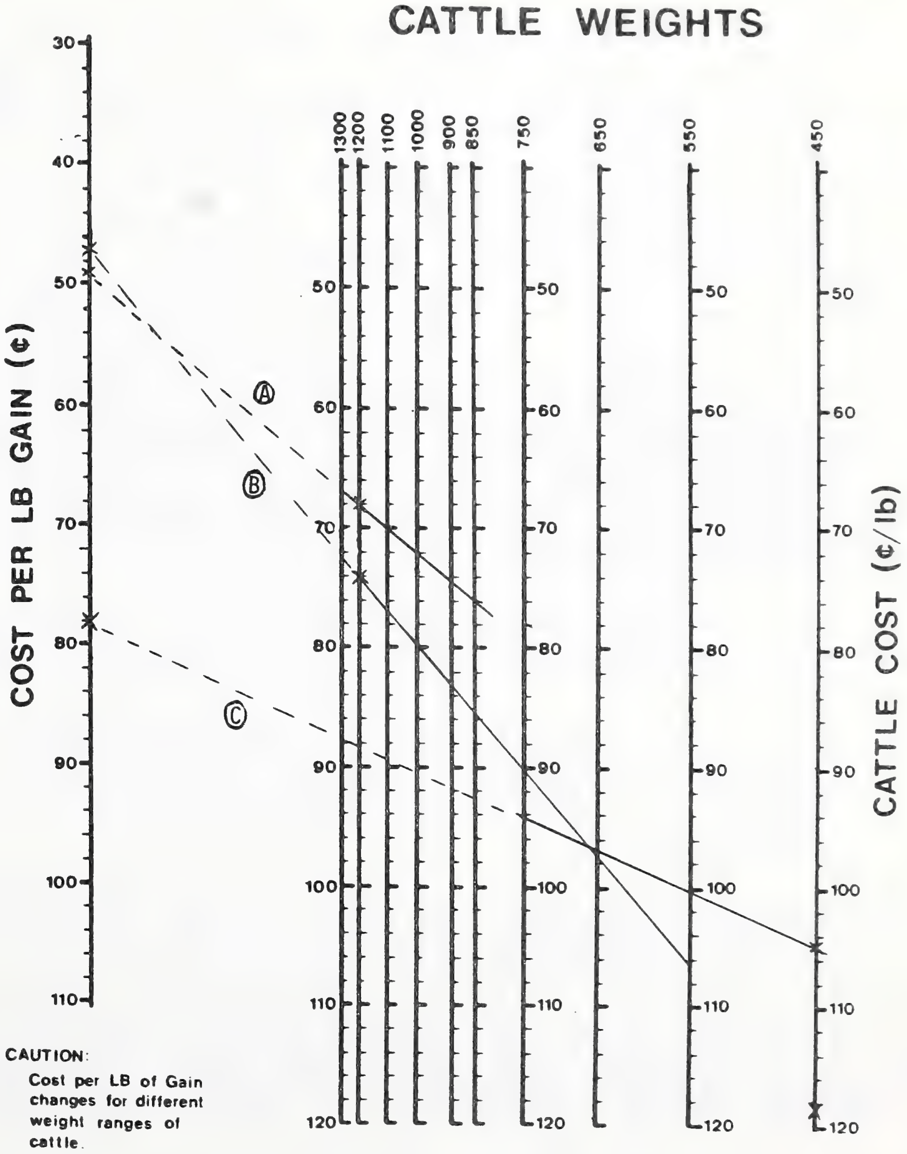
Short keep steer - 850 to 1200 lbs
cost/lb gain = .49¢
expected sale price @ 1200 lbs = .68¢
breakeven purchase price = .76¢

Example #B:

Feedlot steer - 550 to 1200 lbs
cost/lb gain = .47¢
expected sale price @ 1200 lbs = .72¢
breakeven purchase price = $1.07

Example #C:

Backgrounder - 450 to 750 lbs
cost/lb gain = .78¢
purchase price @ 750 lbs = $1.05
breakeven sale price = .94¢



CAUTION:
Cost per LB of Gain changes for different weight ranges of cattle.

(Adapted from Feeder Cattle, What Can You Pay, Agdex 420/86-2)

DEVELOPING REPLACEMENT HEIFERS

With the Canadian beef industry presently in an expansion phase, here is some information on the development of replacement heifers.

1. At weaning, select replacement heifers and pen separately. Performance records will improve accuracy of selection but if not available:
    a) Select largest heifers:
        - likely oldest and from most fertile cows
        - may have potential to grow faster
        - mother may be better milker
        - may cycle sooner
        - may reach breeding weight at lower cost

    b) Select for structural soundness of feet and legs. Avoid heavily muscled or overfat heifers.

    c) Select 30 to 50% more heifers than are required. This allows for culling of open heifers after two breeding cycles, calving difficulty or low production.

2. Identify a target weight for breeding. A general rule is that at 14 months of age, heifers should weigh 65% of mature weight.

Mature Weight	Suggested Heifer Weight @ 14 months
1100 lbs	715 lbs
1200 lbs	780 lbs
1300 lbs	845 lbs

3. Calculate required winter rate of gain to achieve target weight and decide on ration. In most cases required rate of gain will be from 1.25 to 1.5 lb/day. Depending upon forage quality, heifers will need from 3 to 5 lbs of grain (either oats or barley) per day to achieve this weight gain. Protein supplementation may not be required if forages contain some legumes but both vitamin ADE (30,000 IU/day of vitamin A) and fortified salt (.06 lb/day) are a must.

4. Monitor weight gain over the winter by periodically weighing sample groups. Based on progress, ration can be adjusted to assure sexually active heifers at breeding. A good sign is if some cycling is observed at 45 days before breeding.

5. An alternative to the above 4 steps is to choose replacement heifers immediately prior to the breeding season from the feedlot heifer pen. Problems will occur if the winter feed level was too high. The heifer will be fat and problems such as lowered milk production, and a shortened productive lifespan will be encountered. Also, the ration costs may be prohibitive.

6. Since nature gives first priority to nourishing the young, reproduction is delayed if nutrition is inadequate. Thus, first calf heifers require additional time to conceive. Expose heifers to the bull at least 20 days before the mature cow herd.

7. Select bulls which are known for calving ease. Bulls should have been born unassisted and have had a birth weight of 80 lbs or less. A large calf birth weight is the most important cause of calving difficulty. Calf mortality at birth is 4 x greater for calves experiencing calving difficulty than those that do not.

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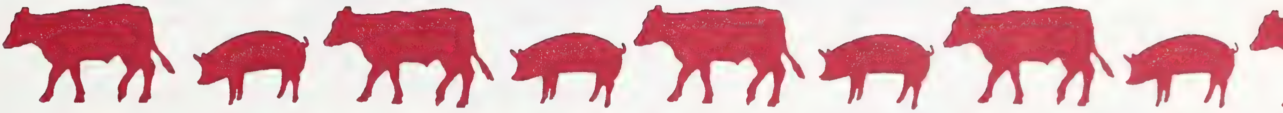

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ESTIMATING DAYS TO MARKET

Knowing the number of days it takes your pigs to reach market weight allows you to evaluate the management, environment, feeding and genetic changes you have made. Producers who do not ear notch or tag pigs as they are born often have difficulty in determining their age to market. The formula below can be used to estimate days to market.[1]

$$\text{Days to market} = \frac{\text{current total pig inventory* x 365}}{\text{total pigs weaned per year x mortality factor}}\ ^{\#}$$

Where:

* Current inventory does not include sows or boars
Litters of unweaned pigs are added

# If postweaning mortality is 3%, mortality factor is .97

[1] R. Schultz, 1986

SIMPLIFIED BOAR RECORDS

Poor breeding herd performance can often be linked to over-use of certain boars. When the manager's time is limited, the active, easy to handle and accessible boar is often over-used. Simple easy to understand boar records can quickly spot potential problems.

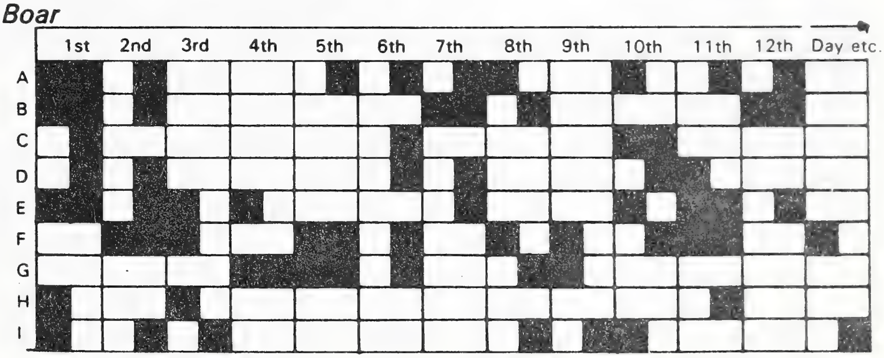
BOAR USEAGE RECORDS

	BOAR I.D.				
	A	B	C	D	E
Monday			W44		
			W44		X18
Tuesday	X135				X18
	X135				Y101
Wednesday		Y28		Y100	Y101
				Y100	X26
Thursday				X22	
	X22				
etc.					

The above recording card allows boar use to be assessed at a glance. Note the over-use of boar E and the under-use of boar B.

Graphical records are easy to use and make even the most complicated things clear.

The boar usage graph (right) has two squares for each day, one for morning and one for afternoon service. This hypothetical case shows boar useage patterns.



- Boars A + F are over-used (stockmen's favourites).
- Boars B + I are being used well (three to four days rests between hard bouts of work).
- Boar C is mature but under-used.
- Boar D is under 12 months old, sensibly used, but not rested enough (six to seven days between use).
- Boar H is a young boar used well.
- Boars E + G are being used erratically.

(Gadd, 1986)

BOAR PRODUCTION RECORDS

Production records on boars will inable producers to cull boars on the basis actual performance in the herd. Record summaries of each boar should be done every six months.

DATE	SOW/GILT NUMBER	FARROWED		OTHER BOARS/USED	
		ALIVE	DEAD		

SUMMARY

AS AT / / (DATE)

NO. SERVICES	
NO. FARROWING	
CONCEPTION RATE %	
T'TL BORN ALIVE	
T'TL BORN DEAD	
AV. BORN ALIVE/LITTER	
AV. BORN DEAD/LITTER	

IDENTIFYING FINISHING DEATH LOSSES

Many producers are comfortable with a 2.5% death loss in their grower-finisher units. Raising 2,000 pigs per year, a 2.5% finisher death loss means hauling one dead pig out of the barn every week of the year. Piling 50 dead pigs in one pile can be an awesome sight. It can also be very costly. In an 85¢ market this rate of death loss could be reducing your potential income by $7,500 a year.

IDENTIFYING THE MAIN CULPRIT

If improvements are to be made the culprits must be identified. The main cause of finisher deaths is often associated with coughing and sneezing in the barn - "respiratory problems".

According to a 1986 Elanco sponsored survey, Total Respiratory Analysis and Control (T.R.A.C.) Clinic, of over 4,600 pigs at slaughter plants across Canada, 80.1% of pigs examined had evidence of pneumonia in their lungs. The study showed that a 216 pound pig with "mild pneumonia" (with 1-10% of its lungs affected) would have a 3% reduction in average daily gain costing $1.11 more to produce than a healthy pig. With 50 + % of the lungs affected, average daily gain would be reduced by 30% costing an additional $15.64.

CONTRIBUTING FACTORS

Other swine diseases can also contribute to pneumonia conditions. Damage to the nasal turbinates by atrophic rhinitis not only can slow growth but can also lead to pneumonia. Degeneration of the pig's filtering system allows foreign material in the air to go directly into the lungs. Of the 4,600 pigs examined in the T.R.A.C. survey, 67.9% of the snouts had turbinate damage due to rhinitis with an average snout score of 2.02 (range 0-5). Less than 8% of the pigs showed no signs of rhinitis or pneumonia.

Another common problem, roundworm larvae migration in the lungs, can cause coughing and irritation possibly leading to pneumonia outbreaks. The problem is significant, as the slaughter plant survey showed, as 26.5% of the pigs examined had evidence of roundworm migration.

EFFECTS OF RESPIRATORY DISEASE

In summarizing the damage, on average, respiratory disease has the following effects on each Canadian pig:

- Reduces average daily gain by 6.6%.
- Extends days to market by 10 days.
- Raises production costs $3.14.

SPOTTING PROBLEMS EARLY

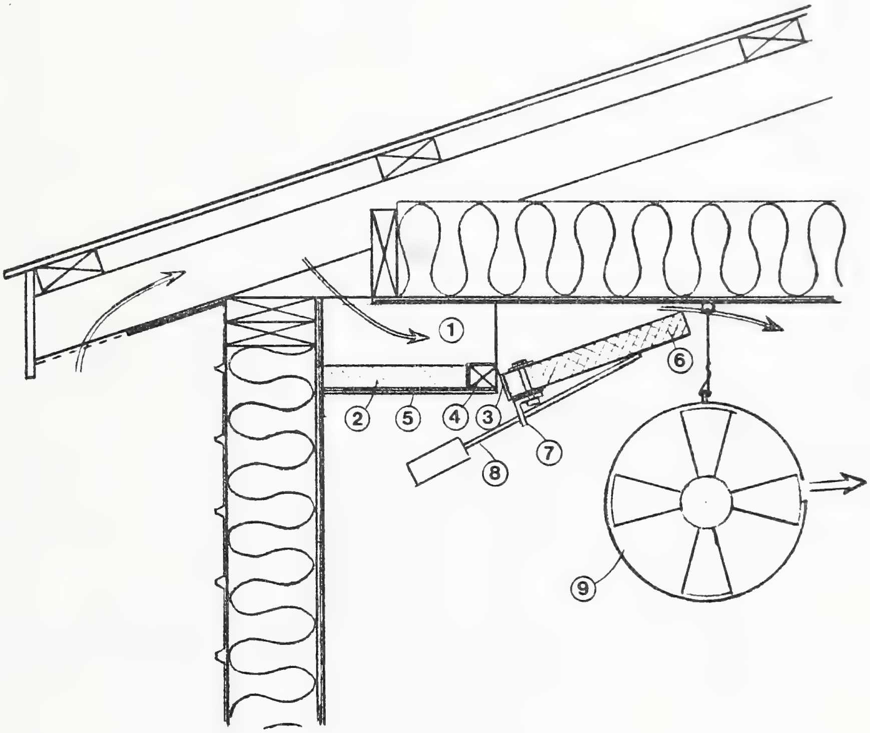
1. Each morning check pigs for coughing or difficult breathing. Get them up and moving. Watch whether they remain standing or lay down immediately.

2. Decrease exposure of sick pigs to healthy pigs. Individually treat and identify sick ones.

3. Do post-mortem checks. Check on the cause of deaths with your veterinarian or local diagnostic laboratory.

POWER-ASSISTED SELF-ADJUSTING SIDE AIR INLET

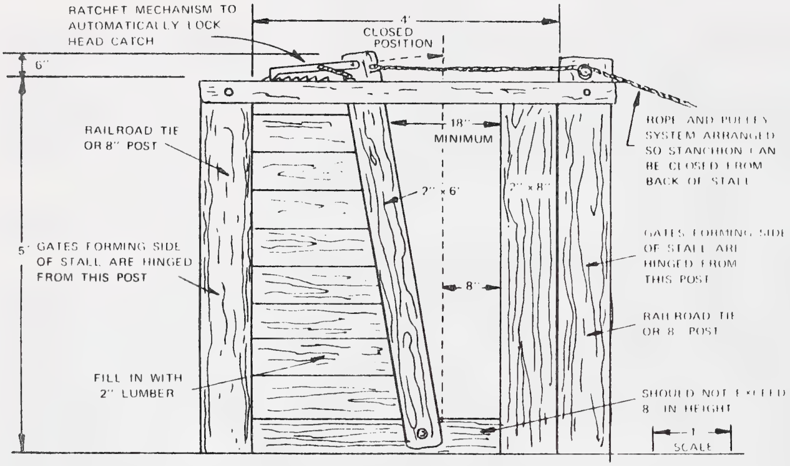
This power-assisted self-adjusting side air inlet is the preferred control method for a negative pressure ventilation system. The main function of the power-assisted air tube is to improve air turbulence during the winter months. The 12" fan operates continuously during the winter months when air volume entering the barn is minimal. For further information contact your regional agricultural engineer.



1. 2x4's; 9 3/4" long; spaced 24" apart; toe-nailed or bracketed to ceiling.
2. 1½" x 8" wide polystyrene insulation board (length to suit air inlet size). Tacked to #1.
3. 9" wide strip, fibreglass reinforced "hay" tarp for hinge; wrap around #4.
4. 2x2 (wrapped with #3) nailed to #1.
5. 9 3/4" x 3/8" plywood protective sheathing nailed through #2.
6. 1½" x 12" polystyrene baffle.
7. 1½" x 1½" sheet metal angle brace bolted to #6 and pinching #3.
8. 5/16" x 18" threaded rod with 2 lb. weight; 2 per 8' length of baffle.
9. 12" diameter single speed fan with 12" duct; for 100' long tube, 1½" holes, 12" o.c.; for 50' barn 2" holes, 12" o.c..

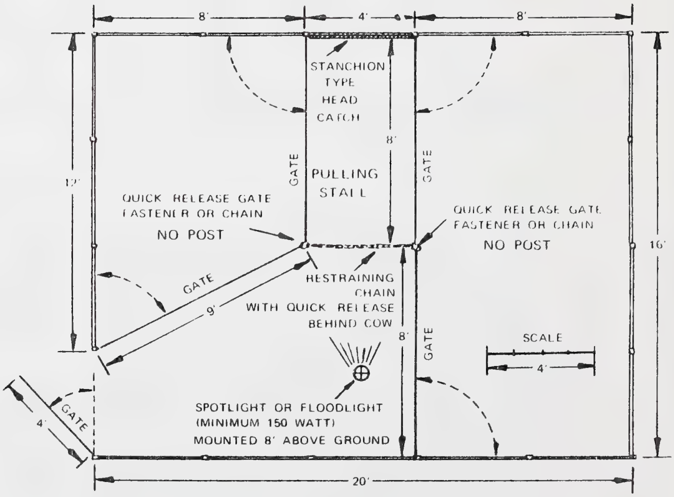
CALVING ASSISTANCE AREA

Calving difficulty can occur on any farm despite the breeding program or size of the cows. Heifers are especially prone to calving difficulty since it is their first delivery. Therefore some type of facility should be provided for giving assistance. The facility can be located within a barn or at one end (preferably closed in) of an open front shed. As indicated in the diagram, a 12' x 12' area provides enough space to accommodate a working chute and space to work around the cow. Producers may want adjacent space to this assistance area for heat lamps or warm up boxes. This facility could also be used to ensure newborn calves, especially from heifers, receive colostrum.


RATCHET MECHANISM TO AUTOMATICALLY LOCK HEAD CATCH
4'
CLOSED POSITION
6"
5'
RAILROAD TIE OR 8" POST
GATES FORMING SIDE OF STALL ARE HINGED FROM THIS POST
FILL IN WITH 2" LUMBER
18" MINIMUM
2" x 6'
2" x 8"
8"
ROPE AND PULLEY SYSTEM ARRANGED SO STANCHION CAN BE CLOSED FROM BACK OF STALL
GATES FORMING SIDE OF STALL ARE HINGED FROM THIS POST
RAILROAD TIE OR 8" POST
SHOULD NOT EXCEED 8" IN HEIGHT
1'
SCALE

A workable head gate plan

(Adapted from Cattleman's Library)


8'
4'
8'
STANCHION TYPE HEAD CATCH
8'
GATE
PULLING STALL
GATE
12'
16'
QUICK RELEASE GATE FASTENER OR CHAIN
NO POST
QUICK RELEASE GATE FASTENER OR CHAIN
NO POST
GATE
9'
RESTRAINING CHAIN WITH QUICK RELEASE BEHIND COW
8'
GATE
SCALE
4'
4'
GATE
SPOTLIGHT OR FLOODLIGHT (MINIMUM 150 WATT) MOUNTED 8' ABOVE GROUND
20'

Floor plan of a workable calving assistance area

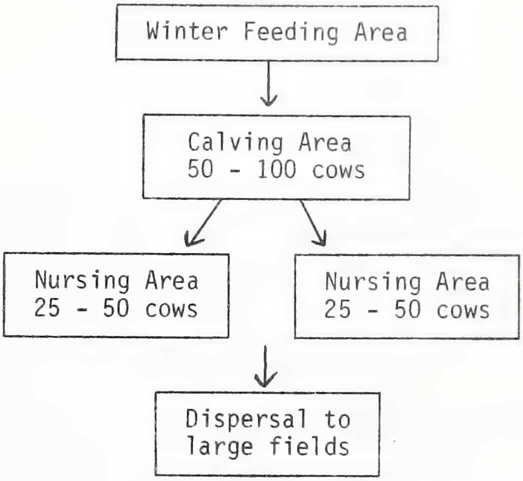
REDUCING CALF SCOURS

For those farms with annual scours outbreaks, adapting the following procedures will drastically reduce bacterial scours. Bacterial scours usually occurs within the first 3 to 4 days as opposed to viral scours which occur at 9 to 10 days of life.

1. Avoid long periods of confinement during winter and calving. It has been shown that the lowest incidences of scours occurs where heifers and cows are wintered and calved separately. If unable to winter separately, the breeding program should be arranged so that heifers calve before mature cows. Heifer calves are more susceptible to scours since the antibody titer in the heifer's colostrum is not as high as in the mature cow's colostrum. Calving heifers before there is a buildup of bacteria in the environment should reduce the scours incidence in heifer's calves.

2. Population density is critical. Allow at least 2000 square feet per cow-calf pair in the calving area. A survey conducted by VIDO shows the risk of scours is 3.5 times higher in northern than southern Alberta. The higher risk relates to lower temperatures and more snow pack restricting calving space. Plowing snow to base ground will allow for the sun to warm and dry the soil. The end result is more space available for calving.

3. Bed frequently with straw throughout the winter and calving period. Bedding will reduce the buildup of manure on cows and provide for a healthier environment.



4. In addition to being separate from the winter area, the calving grounds must have shelter from the wind. Bush, porosity fences or open front sheds are all suitable. Open front sheds should face south with a high front so the sun can get to the back of the shelter and be deep enough to break the wind.

5. A wet calf is very dependent upon its environments. Protection from the wind, dry bedding and colostrum within 4 to 6 hours is essential. A supply of frozen colostrum is a valuable commodity, especially for heifer's calves. Antibodies in the colostrum are readily absorbed in the first 4 to 6 hours by the gut and provide passive immunity to scours. Colostrum also acts as a laxative to clean the intestine. Pay attention to heavy calves who have had a difficult birth. Many scours outbreaks are started and spread by these stressed calves. Get colostrum into these calves early and provide extra care to minimize stress.

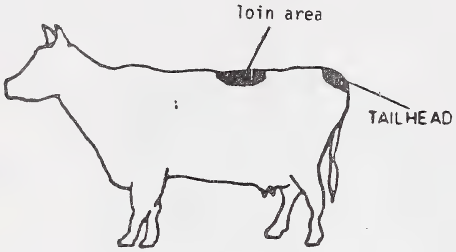
6. In the face of a scours outbreak the most effective and practical method is to remove the animals from the calving area and spread them out or have an alternative piece of ground for calving.

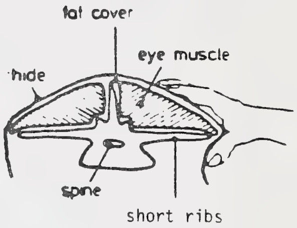
7. If bacterial scours have been a problem in the past, the benefit to cost ratio for using a bacterial scours vaccine is about $30.00 extra at weaning per calf. A scours prevention program should be discussed with your veterinarian.

CONDITION SCORING BEEF CATTLE

Body condition scoring is a useful tool in predicting the body fat and energy content of live animals. In fact, it is a better predictor of body energy content than either weight to height ratio or liveweight. Condition scoring beef cattle is easy to learn, fast, simple, cheap and does not require specialized equipment.

Body condition is scored from 0 (emaciated) to 5 (grossly fat). The fat cover over the loin area between the hip bone and last rib is the major area for condition scoring, especially in thin animals. It is measured by placing your hand on the loin area, fingers pointing to the opposite hip bone. With your thumb, feel the fat cover over the ends of the short ribs.





Only 2 condition scores need to be remembered for most cattlemen. They are:

Score 2 - The short ribs can be identified individually with the thumb, and feel rounded rather than sharp. There is some fleshiness over the tailhead, hip bones and flank. Individual ribs are not visually obvious.

Score 3 - The short ribs can only be felt with firm pressure. The tailhead has a slight covering of fat.

Practical Application:

1. Winter diet could be adjusted for condition score. Cows that score less than 2.5 could be fed separate from cows over a 2.5 score. Young cows (2 and 3 year olds) usually score less than mature cows and should be fed separately at higher energy levels.

2. Cows that score less than 2 at calving will cycle later than cows that score 2.5 or greater. Thin cows (C.S. less than 2) must be fed to gain weight after calving.

IDEAL CONDITION SCORES THROUGHOUT THE YEAR

Start of Breeding Season - 2 to 2.5
Weaning or Fall Pregnancy Check - 3
Calving - 2 to 2.5

3. For synchronized A.I. breeding programs, prostaglandin manufacturers recommend a minimum 2.5 score at the start of breeding. A Saskatchewan trial showed a cost of $45.40 per A.I. calf from cows scoring less than 2.5 and a cost of $25.48 per A.I. calf from cows scoring above a 2.5.

4. To improve by 1 condition score will require from 500 to 600 lbs of barley above the maintenance ration. Improving condition score after calving will be more difficult and require more energy than improving condition score in mid pregnancy. An easy method of improving condition score is to wean the calves early in the fall.

ALBERTA BEEF SYMPOSIUM

"REPRODUCTIVE EFFICIENCY IN THE BEEF COW HERD"

February 10 and 11, 1987
Convention Inn
4404 Calgary Trail
Edmonton, Alberta

The Program:

Tuesday, February 10

11:00 a.m. Registration Opens
Convention Inn

12:00 noon Complementary Light Lunch
Sandwiches and coffee

1:00 p.m. Opening Remarks
Stan Wilson, President,
Canadian Cattlemen's Association

Reproduction Session

1:15 p.m. Managing The Cow Herd for Efficient Reproduction
Dr. Richard Whitman
Director of Educational Programs,
American Simmental Association

2:15 p.m. Producers Panel
Dale Greig - Barrhead
Dan McKinnon - Airdrie

3:15 p.m. Coffee and refreshment

3:30 p.m. Preparing Replacement Heifers for Early Cycling and High Conception
Dr. Richard Whitman
Director of Educational Programs,
American Simmental Association

5:30 p.m. Cash Bar

6:30 p.m. Symposium Banquet

Wednesday, February 11

7:00 a.m. Breakfast

Trace Mineral Session

8:30 a.m. Selenium
John Maas, DVM
Associate Professor,
Large Animal Medicine,
Oregon State University

9:30 a.m. Copper and Zinc
Dr. David Christensen
Professor, Ruminant Nutrition,
University of Saskatchewan

11:00 a.m. The Veterinarians Perspective
Earl Giebelhaus, DVM
Rimbey Veterinary Clinic

11:30 a.m. The Nutritionists Perspective
Rick Corbett, Nutritionist,
Animal Nutrition Section
Alberta Agriculture

12:00 noon Luncheon

Animal Health Session

1:15 p.m. Managing The Reproductive Health of the Beef Cow Herd
Eugene Janzen, DVM
Large Animal Clinic,
Western College of Veterinary Medicine,
Saskatoon, Saskatchewan

2:30 p.m. Managing The Herdsire For Reproduction
Dr. Glenn Coulter
Reproductive Physiologist,
Agriculture Canada Research Station
Lethbridge

3:30 p.m. Wrap Up

REGISTRATION FORM
Alberta Beef Symposium
February 10 & 11, 1987

Please accept my registration for the Alberta Beef Symposium

	First Name	Last Name	Before Jan. 20, 1987	After Jan. 20, 1987
rimary Registrant:	______	______	______($60.00)	______($70.00)
pouse	______	______	______($40.00)	______($40.00)

ddress ____________________ $ ____________________
Total Registration Fee

____

____
(Postal Code) (Telephone)

Make cheque or money order payable to: The Alberta Cattle Commission
Detach and mail to address on reverse side of Registration Form.

The Alberta Beef Symposium:

This is to be the first of a series of Symposium programs designed to help Alberta cow-calf producers improve productivity in their herds. The planning committee, including representatives from producers, the Alberta Cattle Commission and Alberta Agriculture, chose reproduction and trace mineral nutrition as the areas with the greatest potential for improvi productivity and profits in our cow herds.

Speakers with international reputations in these areas of research and production have been invited to discuss the latest developments in improving reproductive performance and understanding trace mineral needs. Alberta producers, nutritionists and veterinarians will round out the program by discussing how they are putting these new ideas to work in their herds and their practices.

Registration:

Fee: Before January 20, 1987 - $60.00 ($40.00 for spouse). After January 20, 1987 - $70.00 ($40.00 for spouse).

Registration includes a ticket for the Symposium Banquet, Tuesday, February 10; Luncheon, Wednesday, February 11, and a copy of the Symposium Proceedings. Commercial sponsors will provide a light lunch at noon on Tuesday and breakfast on Wednesday.

Accommodation:

A block of rooms has been reserved at the Convention Inn until January 20, 1987. The rate is $55.00 (single or double). Mention "The Alberta Beef Symposium" when making reservations. The address is:

The Convention Inn Hotel
4404 - Calgary Trail
Edmonton, Alberta
T6J 5H2
Phone: 434-6415 (Toll free: 1-800-661-6454)

For More Information:

Additional information about the conference may be obtained from:

Conference Chairman: Don Milligan, (403) 948-5101
Conference Secretary: Ross Gould, (403) 427-5335
Conference Registration: Alberta Cattle Commission, Gordon Mitchell, (403) 291-4800

Mail to: The Alberta Beef Symposium
Alberta Cattle Commission
#241, 2116 - 27th Avenue, N.E.
Calgary, Alberta
T2E 7A6
Phone: (403) 291-4800

Alberta Pork Seminar

DISEASE, VENTILATION, and MANAGEMENT

January 28 - 30, 1987
Banff Park Lodge
Banff, Alberta

SPECIAL FEATURES

- Group interaction with expert panels
- Opportunities for informal discussions with resource people
- Opportunities to exchange ideas with your peers
- Stimulating faculty from Canada, the United States, Scotland, and England
- Panel discussions involving resource personnel and producers
- Receive a copy of the *Proceedings* that will serve as a reference manual in the future
- Enjoy the Banff setting (stay on after the conference to ski, use the hot pool, and partake of Banff's other recreational activities)

REGISTRATION INFORMATION

Schedule:
The seminar begins with a wine and cheese reception at 8:30 p.m. on Tuesday, January 27, 1987. The daily schedule has sessions beginning at 8:15 a.m. on Wednesday, January 28 and continuing through lunch on Friday, January 30.

Location:
Banff Park Lodge, Banff, Alberta.

Accommodation:
The seminar registration fee **does not** include accommodation costs. Please make your own reservations at the Banff Park Lodge, where a block of bedrooms is being held for our seminar until December 27, 1986 (the hotel will continue to accept reservations as long as space is available). To guarantee accommodations, a one night deposit must be received by December 27 (credit cards are accepted). Accommodation **and** 3 meals per day (beginning with breakfast on Wednesday) are **$99** single and **$65** double per person.
The mailing address is:

Banff Park Lodge
222 Lynx Street / Box 2200
Banff, Alberta
T0L 0C0
Phone: 403-762-4433
Phone in Calgary Direct: 264-4440

Seminar Fee:
The seminar registration fee is $135 per person. If more than one person registers from the same organization (company/farm/institution) each additional person will pay only $100.

If you register before January 10, the fee will be $115 per person plus $95 for each additional person from the same organization. Save $40 for each additional registration from your organization by registering early.

Registration:
To register please fill in the attached form and make your cheque payable to the UNIVERSITY OF ALBERTA. The form should include the first and last names of all persons attending from the same company/farm/organization. If you wish to register by phone, call Sheila at (403) 432-3029.
The University reserves the right to restrict enrollment or to cancel a program for which there is insufficient registration.

Withdrawal and Refund Policy:
Notification of withdrawal must be received prior to commencement of the seminar. In all cases a $15 fee will be withheld to cover costs. Withdrawal cannot be completed without the return of the confirmation notice. For detailed information, please call 432-3116.

PROGRAM

Tuesday, January 27, 1987

2030	Wine and Cheese Reception

Wednesday, January 28, 1987

Chairman - Frank Aherne

0815 - 0830	Opening Remarks - *Frank Aherne*
0830 - 0915	Sow Housing *Seaton Baxter*
0915 - 1000	Environment and the Pig *Bill Close*
1000 - 1030	Refreshment Break
1030 - 1115	Managing the Pig's Environment *Robert Borg and John Feddes*
1115 - 1200	The Importance of Energy Intake to all Classes of Pigs *Bill Close*
1200 - 1330	Lunch

Chairman - Reg Norby

1330 - 1415	Labor and Human Relations *Pat Leimbach*
1415 - 1500	Pensions and Benefits *Stan Shedd*
1500 - 1530	Refreshment Break
1530 - 1615	Stress Management *Lilly Walker*
1615 - 1700	Speakers' Panel

Bear Pit Session
Chairman - Reg Norby

1930 - 2000	Feeding and Housing *Close, Aherne, and Baxter*
2000 - 2030	Human Relations and Benefits *Shedd, Leimbach, and Walker*

Thursday, January 29, 1987

Chairman - Fred Schuld

0830 - 0915	Sow Infertility *Richard Penny*
0915 - 1000	Understanding Pig Behavior Can Increase Profits *Ann Marie de Passillé*
1000 - 1030	Refreshment Break
1030 - 1115	Provincial Disease Update *Bill Stone*
1115 - 1200	Herd Security *Richard Penny*
1200 - 1330	Lunch

Chairman - Greg Smith

1330 - 1415	Direction of the Pork Industry *Ed Schultz and Fred Schuld*
1415 - 1500	Processors' Concerns *Bill Ballantyne*
1500 - 1530	Refreshment Break

Chairman - Roy Barrett

1530 - 1700	VIDO Presentation and Panel Discussion - Value of Weighing - Floor vs Free Feeding - Feed Mill Calibration

Bear Pit Session
Chairman - Frank Aherne

1930 - 2000	Veterinary Problems *Penny and Stone*
2000 - 2030	Ventilation *Baxter, Barber, Feddes, and Borg*
2030 - 2100	General Questions *Others*

Friday, January 30, 1987

Chairman - John Feddes

0830 - 0915	Novel Approaches to Growth Promotion in the Pig *Phil Thacker*
0915 - 1000	Conventional Approaches to Growth Promotion in the Pig *Frank Aherne*
1000 - 1030	Refreshment Break
1030 - 1115	Ventilation *Ernie Barber*
1115 - 1200	Weaner Housing *Seaton Baxter*
1200	Lunch

For detailed program information, please call Val Smyth at 432-2406.

REGISTRATION FORM
UNIVERSITY OF ALBERTA, FACULTY OF EXTENSION

FOR OFFICE USE ONLY
REF. NO PGM

NAME
LAST NAME FIRST NAME MIDDLE NAME

☐ MALE
☐ FEMALE

STREET AND NUMBER

CITY AND PROVINCE

POSTAL CODE TELEPHONE (RES.)

COURSE NO. 4294 FEE $

BUSINESS NAME POSITION

STREET AND NUMBER

CITY AND PROVINCE

POSTAL CODE TELEPHONE (BUS.)

COURSE TITLE Alberta Pork Seminar

SIGNATURE

DATE

FOR OFFICE US

☐ **PAYMENT ENCLOSED.** Fee must accompany registration form. Remit separate cheque or money order for each course payable to: University of Alberta. Mail to: Faculty of Extension, University of Alberta, 82 Avenue and 112 Street, Edmonton, Alberta T6G 2G4.

☐ **INVOICE EMPLOYER.** If employer is to be invoiced, please include a letter of authorizatio Registered students are ultimately responsible for payment of fees regardless of a third party being invoiced for such fees

AL.1.811

BEEF 'N' BACON

North West Region

Alberta AGRICULTURE

JANUARY 1987 Vol. 2, No. 4

JUL 14 1992

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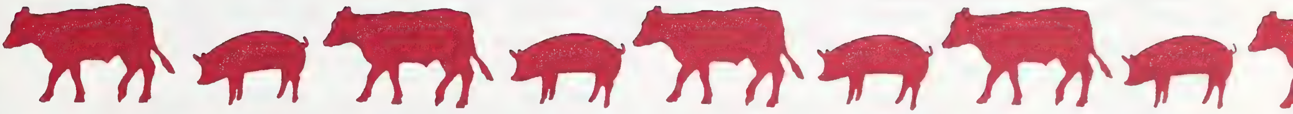


INTRODUCTION

Beef'n'Bacon was initiated in the fall of 1985 as a winter livestock program for the North West Region of Alberta. The newsletter's objective is to reach livestock producers with timely and pertinent topics. It is not our intention to explain the subject matter in elaborate detail. Instead, we hope to spark your interest.

There are eight issues of Beef'n'Bacon distributed from October to May to approximately 2600 livestock producers and agri-businesses in the North West region of Alberta. It is written and edited from the Barrhead Regional Office, Box 1540, Barrhead. District Comments (optional) are added by the District Agriculturist.

More information on all articles is available by contacting your District Agriculture Office or:

Marvin Salomons, Swine Specialist
Rob Hand, Livestock Specialist
674-8248 or 134-1248 (RITE)

Diane Bourne, Food and Nutrition Specialist
Wayne Winchell, Agricultural Engineer
674-8253 or 134-1253 (RITE)

RED MEATS

THE CHOLESTEROL ISSUE

The comment, "I don't eat red meat anymore", is often heard. When asked why, people usually say "It has too much cholesterol". Is this a valid concern or a myth?

Cholesterol is a member of the fat (lipid) family. The human body manufactures 800-1500 mg of cholesterol per day depending on the amount of cholesterol in the diet. Cholesterol is used by the body to make bile salts (needed for digestion), cell wall membranes and for the production of several hormones.

Why the Cholesterol Scare?

The higher the blood levels of cholesterol, the greater the chance of developing heart disease. Because of this relationship, scientists developed the diet-heart theory. They thought that eating less dietary cholesterol would reduce blood levels of cholesterol, thus reducing the risk of heart disease. Several major studies have been conducted to prove this theory. However, the results have been inconclusive.

What About Red Meats?

Many people believe that red meats have more cholesterol than poultry or fish. However beef and pork have a similar cholesterol content to poultry. One serving (3 oz.) of the following meats provide:

Pork	86 mg cholesterol
Lean Beef	56 mg cholesterol
Chicken (light meat)	76 mg cholesterol

Is The Amount of Cholesterol in Our Diet a Valid Concern?

It now appears that reducing the amount of cholesterol in the diet may not have a great impact on blood cholesterol levels. The Alberta Heart Association has issued a statement regarding cholesterol: "Although cholesterol has been a concern to people with heart disease, it is now believed that the amount of cholesterol we get in our foods is not harmful to us. Most people not on therapeutic diets do not need to restrict the amount of eggs, shellfish or organ meats in their diets and can eat the amounts recommended in Canada's Food Guide".

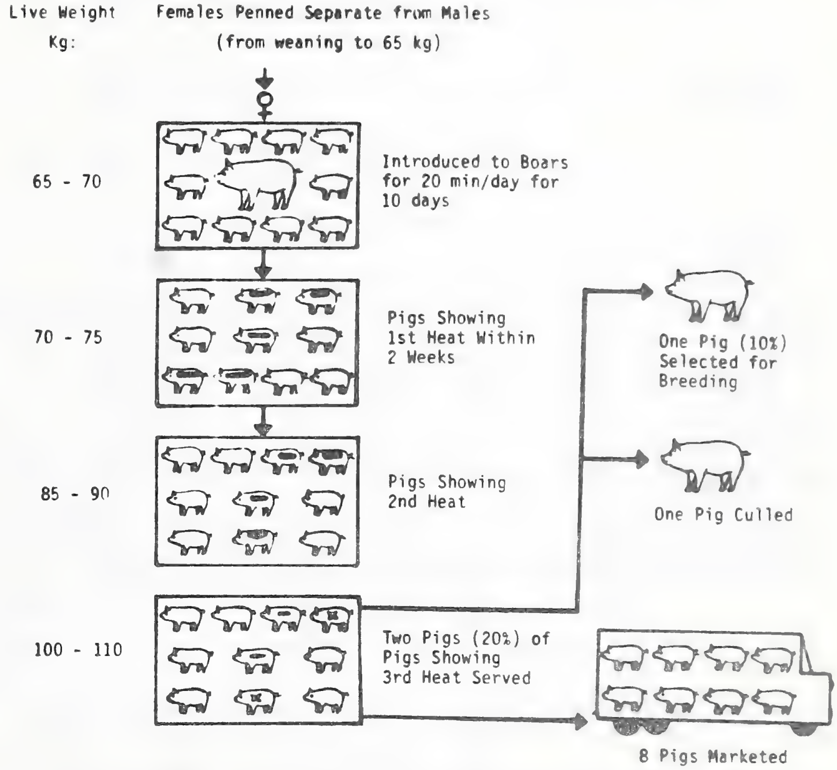
Contrary to popular belief, pork and beef are not high cholesterol foods. They are comparable to chicken in their cholesterol content. Pork and beef are excellent choices for a well balanced diet.

SELECTION AND PUBERTY INDUCTION IN GILTS

Puberty induction and selection of replacement gilts is a management technique most producers fail to understand and use. In many units, an index 80 is received for rejected replacements as gilts end up going to slaughter at very heavy weights.

INDUCING PUBERTY

A simple approach to early selection and puberty induction in gilts advocated by Dr. Frank Aherne of the University of Alberta is outlined below. As shown in the accompanying figure the following steps must be taken:


Live Weight
Kg:
Females Penned Separate from Males
(from weaning to 65 kg)
65 - 70
Introduced to Boars for 20 min/day for 10 days
70 - 75
Pigs Showing 1st Heat Within 2 Weeks
One Pig (10%) Selected for Breeding
85 - 90
Pigs Showing 2nd Heat
One Pig Culled
100 - 110
Two Pigs (20%) of Pigs Showing 3rd Heat Served
8 Pigs Marketed

1. Select a large pool of potential replacement gilts at 65 kg liveweight. Select gilts from sows with the best four to five litter average performances. Full feed from selection to service.
2. Mix gilts in groups of 10-12 per pen. Expose them to a mature boar for 20 minutes per day for 7-10 days.
3. Approximately 50% of gilts should show heat within 10 days. Identify these with a colored marker.
4. Check 18-20 days later. Identify with a second colored marker those that have returned to heat and therefore cycling normally.
5. Make the final selection of gilts at market weight (100-110 kg). From these select gilts based on individual performance and characteristics (growth rate, backfat, feet, legs, udder line).
6. Serve selected gilts at the first heat after they reach 110 kg. Market all gilts not kept for replacements.

ADVANTAGES

- The farrowing barn can be kept full as replacements for culled sows can always be pulled from the gilt pool.
- The stage of sexual maturity of each gilt is always known. The heat cycle in which gilts are served is also known.
- Selected gilts are known to be cycling regularly.
- Culling potential replacements occurs before gilts reach market weight. No reduction in market index and price occurs.

(Adapted from: Pigletter Vol. 6, No.7)

UNDERSTANDING FARROWING RATE

Your herd's farrowing rate represents the efficiency of reproduction from the point of conception to farrowing. Knowing your farrowing rate can provide you with vital information on:

- the number of litters due to farrow
- the future number of pigs to be born
- the future number of pigs to be sold

DEFINING FARROWING RATE

Farrowing rate refers to the number of sows that farrow to a given number of breedings.

$$\frac{\text{total number of farrowings} \times 100}{\text{total number of breedings}} = \text{farrowing rate (\%)}$$

For example, if 40 sows are mated in a month and only 30 farrow, the farrowing rate would be 30/40 x 100 or 75%.

Farrowing rate reflects the combined effects of performance during mating, conception, and gestation. It probably should be calculated weekly for a large herd in excess of 200 sows, or monthly for smaller herds.

TARGETS

The following guidelines can be used to assess your herd's performance and to set targets:

	Pen-Mating	Hand-Mating
Poor	70%	80%
Average	80%	85%
Excellent	85%	90%

In a confinement operation, where hand-mating is practiced, a farrowing rate below 80% should be the "action level".

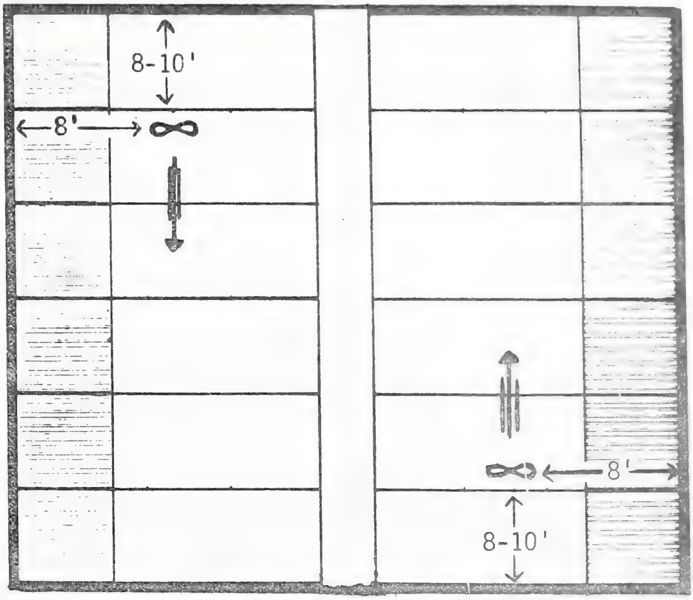
MAINTAINING A GOOD FARROWING RATE

Many factors can reduce your herd's farrowing rate. The following are measures that can be taken to minimize reductions in farrowing rate:

1. Breed sows during the cooler hours of the day. Breed more sows during times when conception rates are known to be reduced. Keep precise breeding records.
2. Maintain adequate boar power (one boar: 15-20 sows). Practice double mating. Keep boars cool.
3. Maintain a sound herd health program. Cut losses due to diseases.
4. Reduce embryo mortality. Minimize stresses in sows by keeping sows penned in small groups or individual crates after breeding.
5. Feed sows to condition. Full feed thinner sows and gilts prior to breeding.

SIMPLE AIR MIXING SYSTEM

The plan shown below illustrates a simple air mixing system for a negative-pressure ventilated barn. This simple approach is particularly useful when air needs to be mixed up during winter when condensation becomes a problem in many barns. It may also be useful in moving air during periods of very hot weather. It can be adapted for both center and outside air-inlet systems.



TOP VIEW

Main Details:

1. Single-speed fans (not on thermostats and without louvres) mounted in opposite corners of the barn approximately 8' - 10' from the end wall and 8' from the side wall.

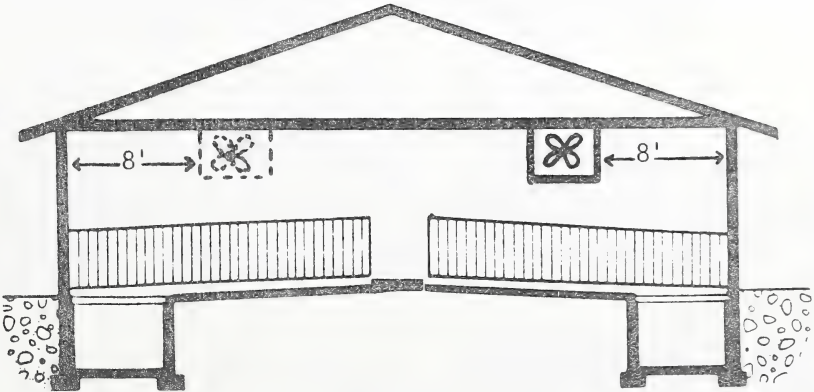
2. Fans can be suspended or mounted in frames to the ceiling such that they blow down the length of the barn.

3. Number of fans required:

   80' barn - two single speed 12" fans

   100-150' barn - four single speed 12" fans

   over 150' barn - four single speed 16" fans (approx. 75' apart)



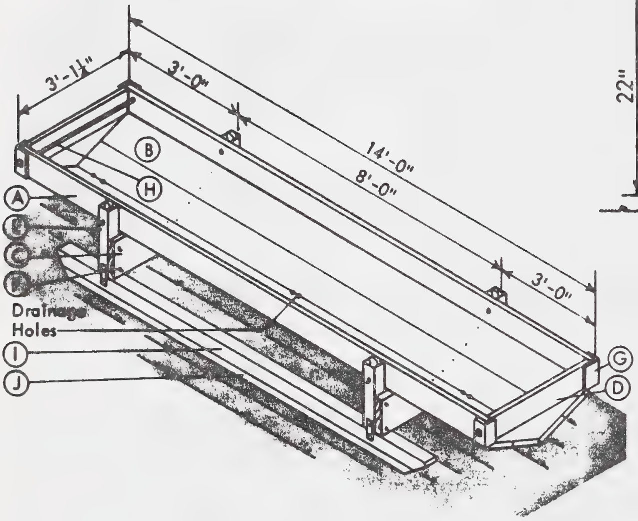
END VIEW

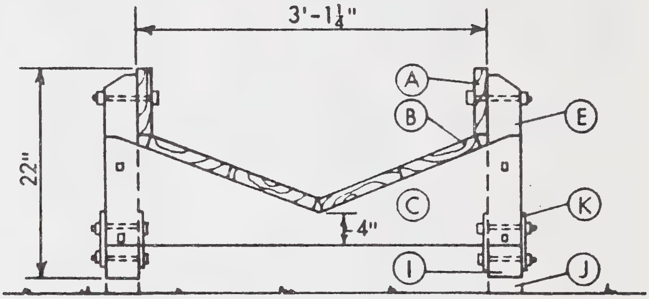
FEED BUNKS

Space requirements at the feedbunk vary depending upon class of cattle and whether limited or self-fed.

Feed Bunk Length	Mature	Yearlings	Calf
Limit-Fed	26 - 30"	22 - 26"	18 - 22"
Self-Fed (grain)	3 - 6"	3 - 6"	2 - 5"

Locate feeders on high ground for good drainage. This particular style of feedbunk allows for better drainage in wet weather and less accumulation of feed along the edges and in the corners. Width can be increased to accommodate for feeding silage or mixed silage-grain rations.





Bunk Height

Heights shown assume a cleaned, well drained site. If mud, snow, or manure may accumulate, raise bunks to 30" for cows.

Bunk Capacity

Bunks may be up to 60" wide and/or 12" - 14" deep for increased capacity. Bunks can be moved with forklift or manure loader.

CUTTING LIST

Item	No.	Description
A	2	2x8 x 14'-0"
B	4	2x10 x 14'-0"
C	2	2x12 x 3'-8¼"
D	4	2x8 x 34¼"
E	4	4x4 x 18"
F	8	½" x 6½" bolts and washers
G	4	2½" x 2½" x 3/16" angle iron
H	2	½" x 3'-6" tie rod
I	2	4x4 x 12'-0" skids
J	2	2x4 x 12'-0", optional
K	4	3/16" x 1½" x 6" strap
L	8	½" x 5" bolts and washers

AVOIDING DIGESTIVE PROBLEMS WITH CALVES

Digestive problems are a common problem when introducing calves to grain and when increasing grain levels. The problem relates to the microflora in the calf's rumen being able to digest cellulose from hay but not starch from grains. Time is required for starch digesting microflora to multiply in number. A large percentage of digestive problems can be related to the ration and how it is fed. However, digestive problems can also be secondary with the primary cause being related to animal health and disease such as pneumonia or IBR.

Here are some common causes of ration-related digestive problems:

1. The grain is too finely ground or rolled. There will be less fines and the cattle will find the grain more palatable if the grain is coarsely ground or lightly rolled. The grain kernal need only be cracked or at the most broken into 2 or 3 pieces for effective digestion by the calves.

2. Chopping hay in tub grinders and self feeding can increase the incidence of bloat. Chopping hay results in many fine leaf particles which accumulate at the bottom of the feed area. Calves will dig to the bottom of the chopped hay in search of these fine leaf particles. If consumed in sufficient quantities, the result is off-feed and bloat problems. These problems can be minimized by limiting the amount of chopped hay fed so that fines do not accumulate or by chopping straw or greenfeed as a portion of the hay chopped. The higher the quality of hay, the less advantage to processing. High quality, very leafy hay should not be chopped. Regardless of whether hay is chopped or fed long, feed bunks should be cleaned periodically to avoid build-up of fines.

3. There is excessive competition for feed and water. Ensure adequate feed bunk space and water consumption. If limit-feeding grain or roughage, 500 lb calves will require 18 to 22 inches and yearlings will require from 22 to 26 inches of feed bunk space. This compares to self-feeding where approximately 8 inches of feed bunk space is required.

4. Oral antibiotics are fed for an extended time. Oral antibiotics inhibit and drastically reduce the microflora of the rumen such that the feed is not properly digested. If oral antibiotics are used, restrict their duration of use.

5. As calf diets range from 40 to 60% barley with mixed hay, the incidence of bloat increases. Levels of barley below 40% or above 60% of daily intake seem to result in fewer digestive problems. To minimize digestive disturbance it is helpful if the grain mix contains:

   a) 0.25 to 0.5% salt (preferably fortified). Small amounts of salt tend to enhance palatability.

   b) feed additives such as Bovatec or Rumensin. These additives have been shown to reduce feedlot bloat.

   c) adequate calcium. Barley is a poor source of calcium so as barley levels increase, the ratio of calcium to phosphorus narrows. Adding limestone can be beneficial.

FIRST CALF HEIFER FEED LEVEL AND CALVING DIFFICULTY

Some producers will reduce the feed level in late pregnancy for the first calf heifer with the hopes of altering birth weights and lowering calving difficulty. Unless heifers are fat (ie. condition score greater than 3) and feed level is excessively high, this practice is considered not desirable or economical.

The most important factors affecting calving difficulty are pelvic area, precalving weight of heifers, sex of calf and calf birth weight. Seventy percent of the variation in calving difficulty is due to factors existing or determined at the time of conception. That is:

a) the size of heifer at conception - A heifer that is small or has a small pelvic area at conception will have a relatively small pelvic opening at calving.

b) growth traits of sire - The genetic potential of the calf for growth in the uterus is determined at conception. Breeding heifers to bulls of above average growth traits will increase birth weight and the incidence of calving.

c) sex of calf - Male calves are usually 5 lbs heavier than female calves at birth. Sex is determined at the time of conception.

A review by R.A. Bellows, U.S.D.A. (1984) of trials in which feed was restricted in the last 30 to 140 days of pregnancy showed the following:

1. Birth weight was reduced slightly but with no appreciable effect on incidence or severity of calving difficulty.
2. Calves from feed restricted first calf heifers had a 27% lower survival to weaning.
3. There was a 19% increase in calf mortality to scours. The calves were further stressed at birth and were more susceptible to other infectious agents.
4. There were 21% fewer dams showing estrus at the beginning of the breeding season. Restricting feed prior to calving had delayed the onset of estrus.
5. There was a 10% lower pregnancy rate at 120 days after calving for dams on the restricted feed diet.

Effect of Gestation Feed Level on Calving Difficulty and Reproduction in Heifers (R.A. Bellows, 1984)

Sire Breeds	Gestation Feed Level (last 90 days)	Post Calving Body Wt. lbs.	Calf Birth Wt. lbs.	Calving Difficulty %	Pregnancy Rate %
Charolais, Hereford, and Angus	Low	694	68	71	65
	High	794	71	66	83

Low - 14 to 16 Mcal DE - equivalent to 14 to 16 lbs of mixed hay.
High - 27 to 30 Mcal DE - equivalent to 27 to 30 lbs of mixed hay.

AL.1.811 C.2.

BEEF 'N' BACON

North West Region

Alberta AGRICULTURE

FEBRUARY 1987 VOL. 2, NO. 5

CANADIANA
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INTRODUCTION

Beef'n'Bacon was initiated in the fall of 1985 as a winter livestock program for the North West Region of Alberta. The newsletter's objective is to reach livestock producers with timely and pertinent topics. It is not our intention to explain the subject matter in elaborate detail. Instead, we hope to spark your interest.

There are eight issues of Beef'n'Bacon distributed from October to May to approximately 2600 livestock producers and agri-businesses in the North West region of Alberta. It is written and edited from the Barrhead Regional Office, Box 1540, Barrhead. District Comments (optional) are added by the District Agriculturist.

More information on all articles is available by contacting your District Agriculture Office or:

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674-8253 or 134-1253 (RITE)

RED MEATS

IRON FOR LIVING

Red meats provide one of the most useable forms of iron to our diet. By eliminating or severely restricting red meats in our diet, obtaining enough dietary iron becomes a challenge.

Iron is essential to life. It is the key component of the red blood cells which transport oxygen from our lungs to our body's cells. Red blood cells live about 4 months (120 days). Replacement of old red blood cells by new ones goes on constantly at a rate of 2.5 million cells per second. When there's insufficient iron available to the body, fewer red blood cells are made. Eventually the condition known as "iron-deficient" anemia develops.

The human body zealously guards its iron supply. However some iron is lost each day through sweat, urine, and blood losses. The diet must supply the lost iron.

Men need to consume 8 mg of iron per day while women need 14 mg. Beef and pork are excellent sources or iron. The following chart lists the iron content of some common foods.

FOOD	IRON(mg)
Pork Liver, 3 oz.	24.7
Beef Liver, 3 oz.	7.5
Spinach, cooked, 1 c.	4.3
Roast Beef, 3 oz.	3.1
Lean Roast Pork, 3 oz.	3.2
Broccoli, cooked, 1 c.	1.3
Chicken Breast (one)	1.3
Whole Wheat Bread (2 slices)	1.5

Although spinach has a comparable iron content to beef and pork, the iron in meat is more readily absorbed by the human body. About 30% of iron in meats is absorbed compared to less than 10% from vegetables. However, the absorption of iron from vegetables is increased if meat and vegetables are eaten at the same meal.

An essential ingredient to an active healthy life is the maintenance of 25 trillion red blood cells. Adequate iron supplies are needed to accomplish this. Red meats are high quality source of iron in our diet.

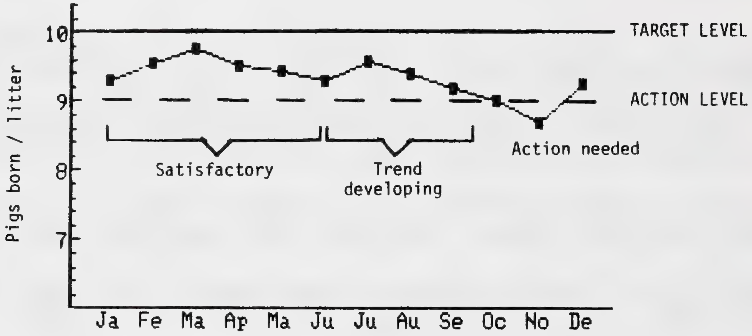
GRAPHS AID RECORD ANALYSIS

How often have you heard the statement "a picture is worth a thousand words". Pictures can often mean far more than words or numbers especially where pig records are concerned. Column upon column of performance or financial figures do not inspire a whole lot of enthusiasm. Alternatively, excellent use can be made of graphs to monitor physical and financial performance of a pig operation.

The two most important reasons for keeping records are for problem analysis and forecasting. The use of graphs as a successful management tool in problem analysis and in forecasting is being employed by many new computer-based recording systems. Although graphical presentations are an natural extension of computer-based recording systems, the technique can be adopted by producers on manual systems.

MANAGEMENT ACTION GRAPHS

The use of management action graphs involves the weekly or monthly plotting of physical and/or financial information on graphs.These have been marked with "target" and "action" levels of performance (see example figure below). The "target" level is the desired performance level whereas the "action" level is point at which some action or decision is required to redirect performance towards the target.



Many records lend themselves to graphical presentation. A few useful ones are: conception rate to first service, weaning to service interval, farrowing rate, pigs born alive, pigs weaned, pigs sold per week, grade index, etc...

ADVANTAGES OF GRAPHS

Placing progress graphs on the wall of the barn office or washroom can quickly inform stockmen how a part of the operation is doing and motivate them into doing a better job.

Graphs can:
- provide an early warning of developing problems
  example: too few sows mated means fewer pigs down the road
- provide visual clues to basic weaknesses
  example: low numbers born alive
- provide a simple means of keeping everyone informed of herd performance
  example: pigs weaned
- identify seasonal trends
  example: seasonal patterns in conception rates

One caution: As differences are readily apparent, it is easy to be panicked by graphs. Thoroughly investigate "action" levels.

SWINE

PIG MANAGEMENT CHECKLIST

The following checklist might tell you your management needs improvement.

			YES	NO
HEALTH				
Do you:	1.	know which diseases are common in you area?		
	2.	practice routine vaccinations for erysipelas or other known diseases in your area?		
	3.	routinely have post-mortems checks done?		
	4.	keep records on diagnoses made and medications used?		
	5.	keep medicines labelled and in a safe place?		
	6.	provide boots for visitors?		
BREEDING				
Do you:	7.	have you planned breeding program with identified stock?		
	8.	supervise and record all matings?		
	9.	have matings take place on a dry non-slip surface?		
	10.	know your herd conception rate?		
	11.	keep sows cool in summer during mating and gestation?		
MANAGEMENT				
Do you:	12.	maintain a continous rodent poison program?		
	13.	wash, disinfect, and move sows into clean facilities before farrowing?		
	14.	have a thermometer available to check farrowing sows?		
	15.	clip teeth and inject iron to baby pigs within 24 hrs.?		
	16.	even up litter sizes within 48 hrs. after farrowing?		
FEEDING				
Do you:	17.	check and adjust feed quantities for growing pigs?		
	18.	provide fresh creep and water to piglets by seven days?		
	19.	feed nursing and dry sows according to condition?		
	20.	allow mice or birds to contaminate feed?		
HOUSING				
Do you:	21.	make sure your barns are well insulated?		
	22.	monitor barn temperatures regularly?		
	23.	regularly maintain buildings?		
	24.	clean farrowing pens/rooms between batches of sows?		
MARKETING				
Do you:	25.	choose ideal marketing weight based on cost and returns?		
	26.	select replacements based on performance tests for growth and backfat?		
	27.	monitor index and backfat levels on all pigs marketed?		
	28.	regularly check dressing percentages?		

SCORING AND RATING (# YES minus # NO = YOUR SCORE)

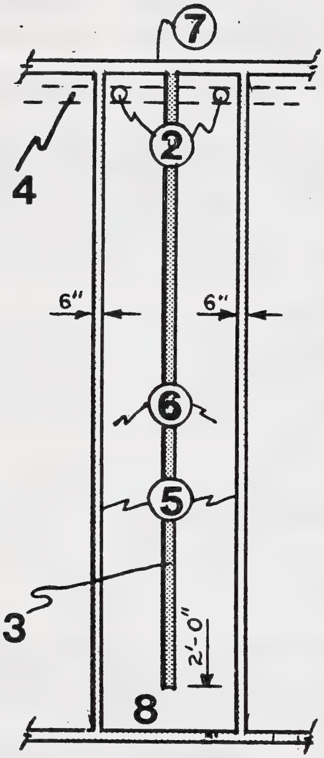
SCORE	YOUR MANAGEMENT PROGRAM RATES
25-28	Excellent - you are keen to do the job properly
20-24	Good - you are in business to show a profit
12-19	Average - it's time to review your program
5-11	Indifferent - managing the pigs is "too much bother"
below- 5	Poor - you are likely to have trouble

(adapted from: Australia Agnote)

HAIRPIN MANURE CHANNEL

The use of a "hairpin" design manure channel reduces the risk of manure build-up in gutters. Two drain plugs (see 2) at the same end of the channel are separated by a concrete wall (3) and are pulled on alternate drainings of the manure gutter. This allows manure to flow in one direction for one or two drainings and then in the opposite direction (around # 8) for one or two drainings.

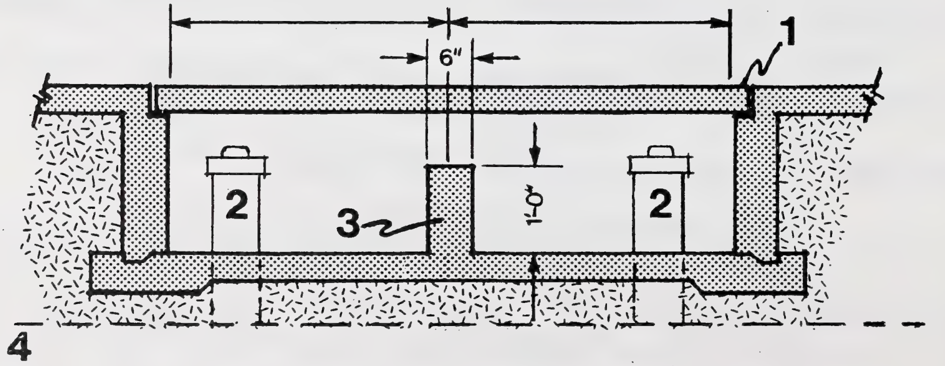
In order to work effectively the center wall should be at least half the height of the gutter depth. The center wall can be constructed of solid concrete or concrete blocks topped with concrete. In a couple cases, thick arena board was used and was inserted into the wet concrete gutter floor during construction.



TOP VIEW

DETAILS

1. Concrete lip, for floor sized to manufacturer's specifications.
2. 8" drain pipe and plastic stopper.
3. Concrete gutter divider, height not critical.
4. 10" pvc sewer pipe, uniform slope (1:100 min) toward collect sump.
5. Concrete trench walls.
6. Manure trench, combined footing and slab.
7. Exterior wall.
8. Top of hairpin gutter, 2' space required at turn for manure flow.



END VIEW

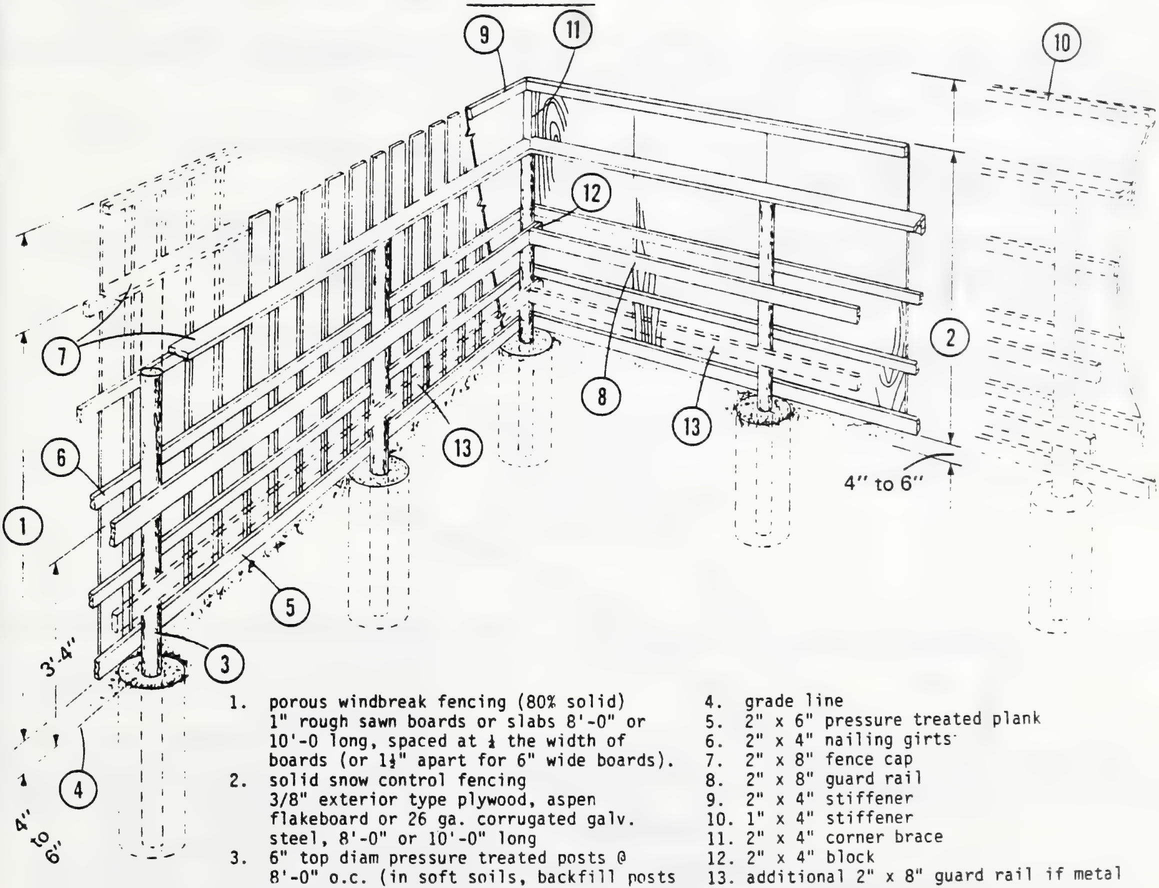
WIND BREAK FENCES

A windbreak with 20% porosity provides some wind protection as far as 12 times the fence height downwind. At 6 times the fence height downwind, protection is very good. In contrast, a solid fence provides wind protection for only 2 to 3 fence heights downwind.

Do not underestimate the force of wind on a board fence. Posts should be pressure treated with wood preservative. To prevent overturning and frost heaves, back fill the posts with concrete placed in smooth walled holes. If the post hole is not smooth walled, backfill with crushed rock, well compacted.

One potential location for windbreak fences is on a well drained site within the calving grounds. If windbreak fences are built in an "L" or "+" shape, the cattle can find protection regardless of the wind's direction. Bed on the leeward side of the fence.

PLAN 8368



1. porous windbreak fencing (80% solid)
   1" rough sawn boards or slabs 8'-0" or 10'-0 long, spaced at ¼ the width of boards (or 1½" apart for 6" wide boards).
2. solid snow control fencing
   3/8" exterior type plywood, aspen flakeboard or 26 ga. corrugated galv. steel, 8'-0" or 10'-0" long
3. 6" top diam pressure treated posts @ 8'-0" o.c. (in soft soils, backfill posts with concrete)
   8'-0" high fence use 10'-0" long posts, 3'-6" deep
   10'-0" high fence use 12'-0" long posts, 4'-0" deep
4. grade line
5. 2" x 6" pressure treated plank
6. 2" x 4" nailing girts
7. 2" x 8" fence cap
8. 2" x 8" guard rail
9. 2" x 4" stiffener
10. 1" x 4" stiffener
11. 2" x 4" corner brace
12. 2" x 4" block
13. additional 2" x 8" guard rail if metal siding

ASSISTANCE FOR HYPOTHERMIC CALVES

Newborn calves are easily stressed especially when their new environment's temperature is -20° or colder and the wind is blowing. For added stress, the calf may have had a prolonged, difficult birth into a snow bank and as of yet not received colostrum. The accumulation of these stresses results in the newborn calf's body temperature being reduced (hypothermic). The calf must be rewarmed for it to survive.

The University of Alberta conducted a trial to assess the methods of rewarming that hypothermic newborn calf. In their trial, calves within 24 hours of birth had their body temperature reduced from the normal 38°C to 30°C. Once the calves rectal temperature was at 30°C, one of four methods was used to rewarm the calves. The four methods were:

A. Warm Water - Calves were tied to a padded support and placed in warm water gradually increasing water temperature to 38°C.
B. Warm Water & Alcohol - Same as "A" plus 40 ml of 20% alcohol given orally.
C. Heat Lamps - Calves were is a 20-25°C room with two-250 watt infrared heat lamps
D. Heat Lamps & Blanket - Same as "C" plus wrapped in cotton blanket

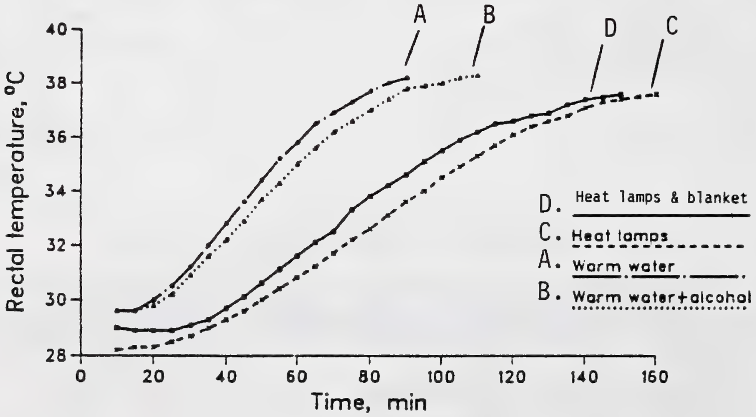
The results are:

1. All calves were successfully rewarmed using one of the above techniques. With heat lamps or heat lamps and a blanket, the calves were rewarmed in 2 to 3 hours. Immersion in warm water achieved rewarming in 1½ to 2 hours.

2. There was no difference in revival time between calves immersed in warm water and calves immersed in warm water plus given alcohol.

3. For calves immersed in warm water, there was less body heat produced for rewarming than for calves rewarmed in the air environment. That is, rewarming the calves in warm water helped conserve the calves' energy.

4. A rectal thermometer is a valuable tool for monitoring hypothermia and its recovery.



RECTAL TEMPERATURE OF NEWBORN CALVES RECOVERING FROM HYPOTHERMIA

(Feeders Day Report, 1986. University of Alberta)

BEEF

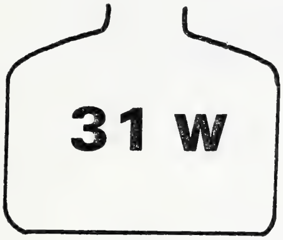
CATTLE IDENTIFICATION

Identification ear tags provide the means for good records. There are many ways of numbering tags all with advantages and disadvantages. When deciding on a system keep in mind the following comments.

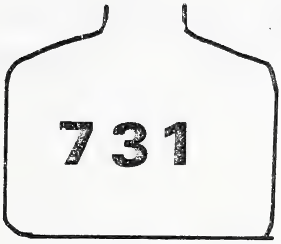
Do not put too much information on the tag. More information requires a smaller print and the small print can not be read at a far distance. Besides, the ink occasionally peels off and the tags tend to get lost. Use a record book in conjunction with the tag rather than the tag being the record book.

An easy numbering system is for the first calf born that year to be #1, the second #2, and so forth until the entire herd has calved. Some producers tag the calf with the same number as the cow. This system is also practical since it allows the operator to easily find cow-calf pairs in the pasture without a record book. However it does present a problem when heifers are put back into the breeding herd and have the same ID number as one or several other cows. Note that grazing reserves require that the calf be tagged with the same number as the cow.

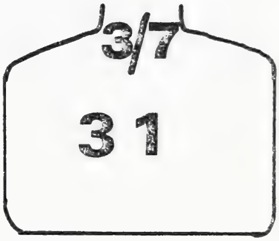
Here are three example Numbering Systems



31st calf born
W - year letter
for 1987



31st calf born
7 - for 1987
(if over 100 calves
calf 131 would be
7131)



31st calf born
3/7 - born third
month of 1987

Printing on both sides of the tag will allow for easier spotting of numbers in the field.

KEEP THE INK ON THE TAG

Ken and Anna Jersch from Highridge use a microwave to imprint the ink onto the ear tags. By heating the tag the ink melts into the plastic and the tag becomes permanently etched. Their proceedure is:

1. Use a liquid ear tag ink such as the Tuf-flex ink
2. Write the desired identification number onto the tag
3. Place in microwave oven until surface of tag and ink appear shiny (about 30 seconds). A conventional oven will also work but takes longer.
4. Remove and let cool.

PRECAUTIONS - tags will melt fast if in the oven too long
- keep a glass of water in the microwave

AL.1.811

BEEF 'N' BACON

North West
Region

Alberta
AGRICULTURE

CANADIANA

MAR - 6 1987

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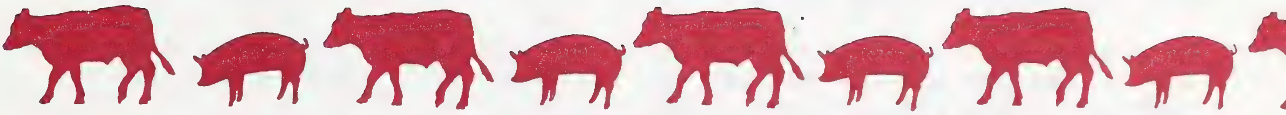

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RED MEATS

TOO MUCH FAT?

In 1977, Health and Welfare Canada adopted four nutrition recommendations aimed at improving Canadian's health. One of the recommendations was to reduce the amount of fat in the diet to 35% of total daily caloric intake. Presently, Canadians are consuming about 40-42% of their daily calories from fat. In an attempt to reduce their fat intake, many people are eating less red meat. Is this a sensible thing to do?

Consider these facts. Today, Canadian meats are leaner due to changes in breeding, feeding, and grading. Recent research indicates that beef is 20-60% leaner and pork is 50% leaner than shown on food tables of 15-20 years ago. In fact, today's beef and pork has a comparable fat content to poultry and fish. For example:

3 oz Serving	Fat (g)
Beef Cuts (lean only)	
Eye of Round	3.9
Rump Roast	6.5
T-Bone	11.0
Pork Cuts (lean only)	
Ham	3.3
Loin Chop	7.6
Chicken	
Breast	5.9
Drumstick	9.5
Salmon	7.0

Eating less red meats will not significantly change the fat content of our diet. Besides red meats - poultry, nuts, dairy products, margarines, vegetable oils and salad dressings also contribute fat to the diet.

It is unfortunate that many people thought that consuming less fat meant eating less red meat because that move deprived them of a nutritious food. Lean red meats have an important role to play in diets with less fat.

FEEDING FIELD PEAS

Increased availability of locally-grown field peas offers swine producers an excellent opportunity to use this high quality protein source in their swine rations. Unlike soybean meal or canola meal which require further processing, peas can be ground and mixed directly into a swine feed right on the farm.

COMPOSITION OF FIELD PEAS

A comparison of the nutritional composition of field peas and other commonly used feedstuffs is shown in the following table.

	Barley	Soybean Meal	Canola Meal	Field Peas
Dry Matter (%)	89.0	90.0	94.0	90.0
Digestible energy (Kcal/kg)	3086	3860	2734	3527
Protein (%)	11.5	46.0	36.0	24.0
Lysine (%)	0.38	3.10	2.15	1.70
Crude fibre (%)	5.1	3.9	12.4	5.5
Calcium (%)	0.05	0.27	0.66	0.11
Phosphorus (%)	0.36	0.62	1.09	0.42

The digestible energy value of field peas is higher than most commonly used feedstuffs. Peas are an excellent source of lysine and are adequate in all other essential amino acids except for methionine. As the protein content of peas has been found to vary (ranging from 14-28%), it is advisable to have field peas tested prior to their use in swine feeds.

FEEDING LEVELS FOR PIGS

Field peas are very palatable and contain no toxic materials or enzyme inhibitors in sufficient quantities to reduce pig performance. Trypsin inhibitor levels are similar to those found in barley. Peas can completely replace soybean meal as the sole source of supplemental protein (up to 35-40% of the ration) in feeds for dry sows, nursing sows and growing-finishing pigs without affecting performance or carcass quality.

ECONOMICS OF FEEDING

Before deciding to purchase field peas for use in swine rations, it is important to know what you can afford to pay for them. Assuming peas at 24% protein and 3530 Kcal DE/kg, the following table shows the price at which peas can be purchased and used to achieve a saving. If soybean meal is $300/tonne and barley is $70/tonne, field peas must be purchased for $153/tonne or less.

VALUE OF FIELD PEAS

Cost of 11.5% Barley	Cost of 46.0% Soybean Meal ($/tonne)				
($/tonne)	240	260	280	300	320
60	125	132	139	146	153
70	132	139	146	153	160
80	140	146	153	160	167
90	147	154	160	167	174

SWINE

REDUCING STILLBIRTH LOSSES

Stillbirths can be considered the single most important cause of piglet mortality. On most Canadian farms, stillbirths account for approximately 5 to 7% of all piglets born or about one pig in every two litters.

WHEN DO STILLBIRTHS OCCUR?

There are two categories of stillbirths:

1. Prepartum - these are pigs that die before farrowing, most often from a myriad of infectious reproductive and developmental diseases.
2. Intrapartum - these are pigs that die during the actual farrowing process.

About 10% of stillborn pigs are actually dead when farrowing begins; the remaining 90% die between the start of farrowing and actual birth. In many cases half of this latter group can be classified as "found dead" rather than stillborn as many were born alive but died within the first few minutes or hours of life.

EFFECT OF BIRTH ORDER

The sows' uterus is over a meter long and the umbilical cord will stretch to about two-thirds (60-75 cm) of that length. For this reason more than 70% of the stillbirths occur in the last three pigs born as many of these piglets travel up to one-third of a meter (13 inches) with a ruptured umbilical cord.

Birth Order	1st Half of Litter	2nd Half of Litter	3rd Last Pig	2nd Last Pig	Last Pig	Last 3 Pigs
% of Stillborn	9	89	18	14	39	71

STILLBIRTH CHECKLIST

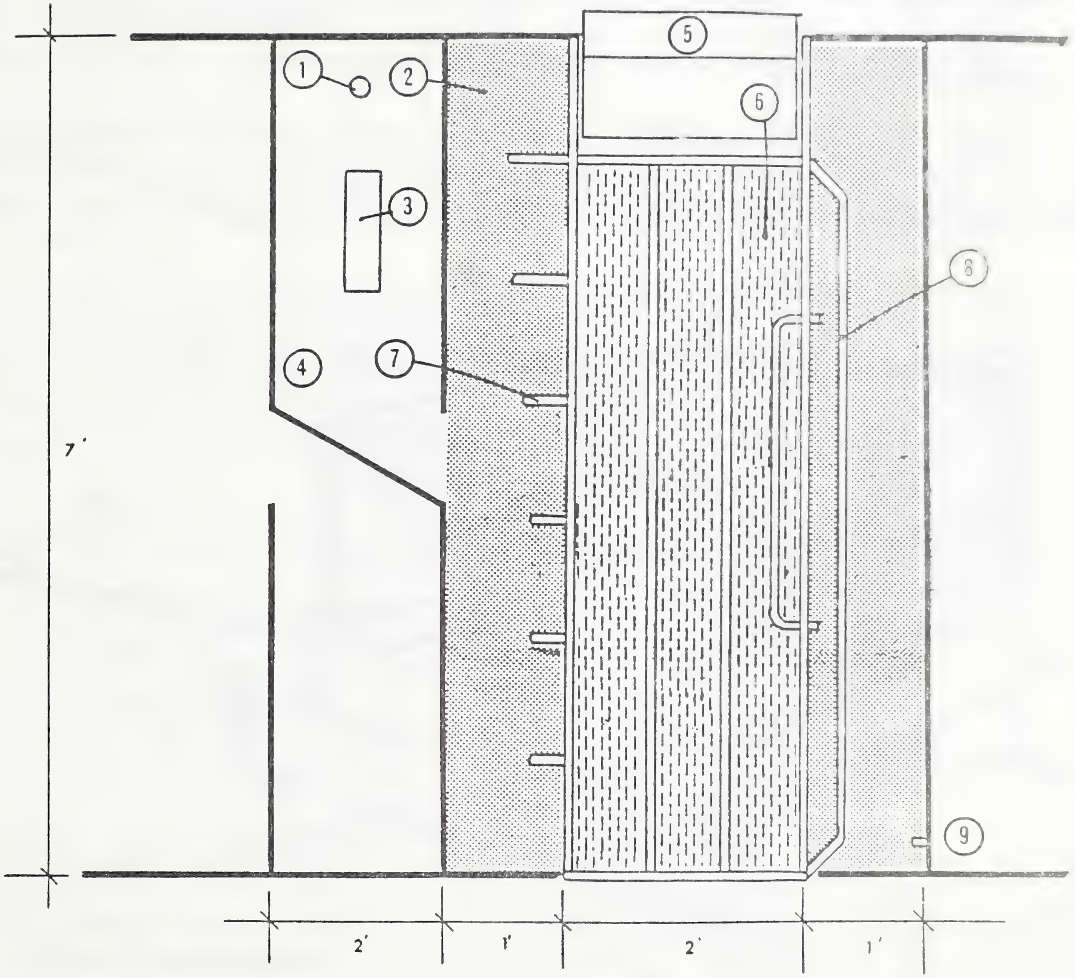
If your herd's stillbirth rate is over 8% the following checklist which appeared in International Pigletter may be useful in examining the problem:

- Determine if pigs were, in fact, stillborn. True stillborn piglet lungs are filled with fluid and do not float. Lungs of piglets which took at least one breath are filled with air and will float.
- Make sure sows are in good condition. Unfit and fat sows tire easy and take longer to farrow.
- High room temperatures make sows tire easily. Keep farrowing rooms around 18-21°C (65-70°F).
- Attend farrowings and assist sows when possible. Consider induced farrowings. Assist piglets gasping for air by clearing away mucus and blowing down over their mouths.
- Hang a heat lamp and place outdoor-indoor carpet over the slotted area behind the sow during farrowing.
- Check stillbirths in relation to sow parity and litter size.
- Do a stillbirth map of your farrowing room. Plot numbers in relation to door and fan locations or any other conditions which may disturb the sows.

GOOD FARROWING CRATE ARRANGEMENT

The farrowing crate arrangement shown below uses a shared covered side creep with solid flooring. The rear half of the creep is used by piglets in the adjacent farrowing crate.

The piglet nursing area uses a warm, soft 'tenderfoot' flooring material. To limit piglets resting under the sow, a cooler cast iron flooring is used for the sow's lying area. This crate design allows provision of a warm (30°C) environment for the piglets and a cooler (20°C) environment for the sow.



DETAILS

1. Small red light
2. Tenderfoot flooring
3. Radiant heater
4. Covered creep area with opening to sow
5. Feeder
6. Cast iron floor grate
7. Option 1 - fingers on side
8. Option 2 - adjustable side rail with anti-drop bar
9. Piglet waterer

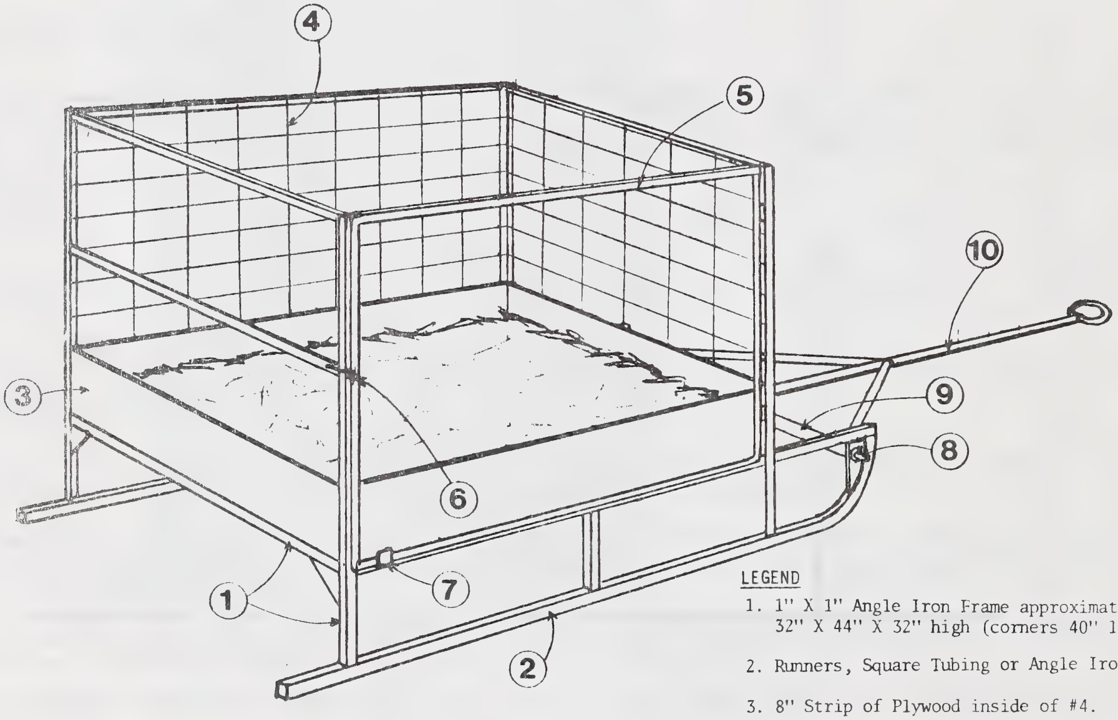
(Borg, 1986)

NEWBORN CALF SLED

Cattlemen are often faced with the problem of moving a cow and her newborn calf to a claiming area, closer to shelter and bedding or into a separate pen. Cows can be very possessive of their newborn calf and injuries can happen when an individual gets between a newborn calf and an over anxious mother.

The calf sled described below will reduce the risk of injury to the individual and ease the job of moving the cow and calf to the new area. The calf sled can be easily pulled by a motorized trike or by slipping a rope thru the hitch and pulling by horseback. The sled will slide over snow, pasture or even mud. Wheels are not recommended since the ride would be too rough. The sled is wide enough to follow the tracks of the trike and be relatively stable.

The side panel swings open to allow for easy entry and exit of the calf. With the calf remaining visible to the cow, the cow follows readily. An eight inch perimeter board at the base of the sled prevents the calf legs from protruding from the sled. A 48 inch tongue in the sled allows for easy hookup and handling of the sled.



LEGEND

1. 1" X 1" Angle Iron Frame approximately 32" X 44" X 32" high (corners 40" long).
2. Runners, Square Tubing or Angle Iron.
3. 8" Strip of Plywood inside of #4.
4. Steel Mesh or "Pig" Panels for All Sides.
5. Swinging Side Gate.
6. Gate Latch.
7. Gate Bracket to Prevent Gate Springing Open at Bottom.
8. 5/8" Rod Through #9.
9. 1" Tubing.
10. 4' Long Tongue.

(Art, Ken & Mark Carlson farm, Cherhill)

LIFETIME PRODUCTION IN BEEF COWS

A study from the Meat Research Center in Nebraska compared crossbred to straightbred cows for lifetime productivity. Breeds involved in the study included Angus, Hereford and Shorthorn and their crosses. Over a 12 year period, performance was monitored. Cows were culled because of reproductive failure or severe unsoundness. Heifers were culled if open. After the first breeding season and until the cows were 10 years old, only cows failing to conceive in two successive years or sick or injured cows were culled. Cows 10 and older were culled the first time they were open.

The results were:

1. Crossbred cows were exposed to breeding for 1.2 more breeding seasons than straight bred cows (a 16% improvement).

2. Crossbred cows had 1.2 more pregnancies than straightbred cows (a 20% improvement).

3. Crossbred cows produced 1.0 more calves at birth than straightbred cows (a 19% improvement)

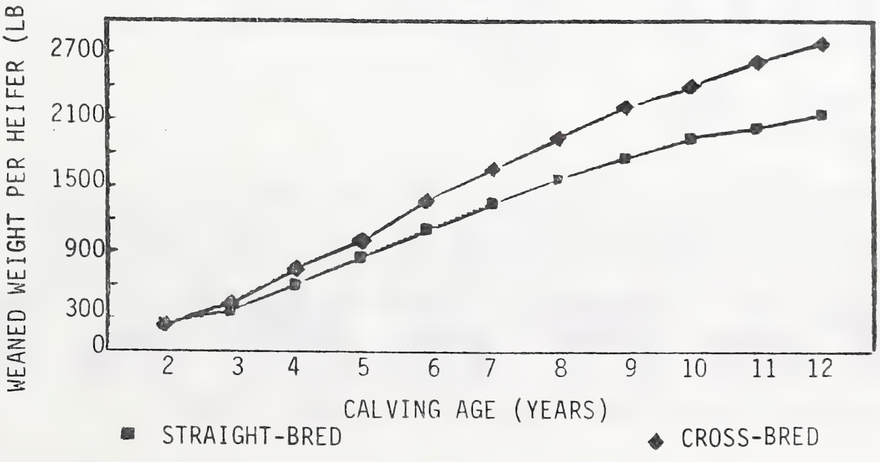
4. Crossbred cows produced 1.0 more calf at weaning than straightbred cows (a 20% improvement)

5. Crossbred cows produced 30% more weaning weight yearly. Over their lifetime, crossbred cows produced an additional 642 lbs. of calf. This is equivalent to 1.55 calves, based on straightbred calves averaging 414 lbs. at weaning time. Or expressed in other terms, this 642 lbs. is equivalent to an extra 78 lbs. weaned per crossbred cow exposed (based on 8.2 breeding seasons).

CUMULATIVE PRODUCTION

TRAIT	CROSSBRED COWS	STRAIGHTBRED COWS
Breeding season #	8.2	7.1
Pregnancies #	7.2	6.0
Calves born #	6.6	5.6
Calves alive @ 72 hours	6.4	5.4
Calves weaned #	6.2	5.2
200 day weight weaned (lb)	2798	2156

LIFETIME PRODUCTIVITY



SCROTAL CIRCUMFERENCE AND FERTILITY OF THE COW HERD

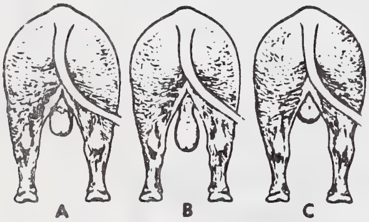
It has been estimated that 20 to 40% of the beef bulls in present use are unacceptable with many more bulls being barely adequate. It can be argued that in the past our preoccupation with growth rates has overshadowed bull fertility, the single most important trait.

Testicular and scrotal development is one of four parameters evaluated when determining the reproductive potential of a bull. The other aspects are physical ability to breed, seminal quality and serving capacity. The scrotal circumference measurement (SC) measures the amount of sperm producing tissue within the testes. The larger the SC the greater the potential sperm production. Trials conducted under range conditions, showed that as SC increased up to 40 to 42 cm. in young beef bulls, fertility also increased (ie. more cows conceived).

The following table lists the recommended minimum SC measurements. Bulls with a SC less than these minimums would be expected to have unsatisfactory fertility under moderate breeding pressure. Cow calf producers should select bulls with substantially greater SC than the minimums listed here.

Minimum Scrotal Circumference in Centimeters

	Breed			
Age (months)	Simmental	Angus, Charolais and Maine Anjou	Hereford and Shorthorn	Limousin and Blonde d'Aquitaine
12-14	33	32	31	30
15-20	35	34	33	32
21-30	36	35	34	33
> 30	37	36	35	34



Straight Sided

Bottle Neck (desirable)

Wedge Shaped

Avoid bulls with "straight sided" or "wedge shaped" scrotums. "Straight sided" scrotums often contain excess fat whereas "wedge shaped" scrotums tend to hold undersized testes. "Wedge shaped" scrotums also hold the testes too close to the body and may impair proper thermoregulation. The ideal shaped scrotum will have a distinct neck i.e. "bottle shaped".

Scrotal circumference (SC) is also related to female fertility traits. Research suggests that using a sire with above average testicular size for his age and breed will result in female offspring that reach puberty at a younger age, cycle more regularly and consequently have a greater lifetime productivity. Evidently, the hormonal pattern of the bull is inherited by the female and is reflected as a younger age at puberty and a higher fertility.

(Adapted from G. Coulter, Alberta Beef Symposium Proceedings, 1987)

CANADIANA

BEEF 'N' BACON

North West
Region

Alberta
AGRICULTURE

APRIL 1987 Vol. 2, No. 7

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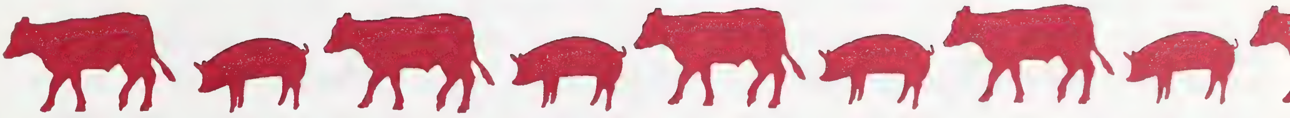

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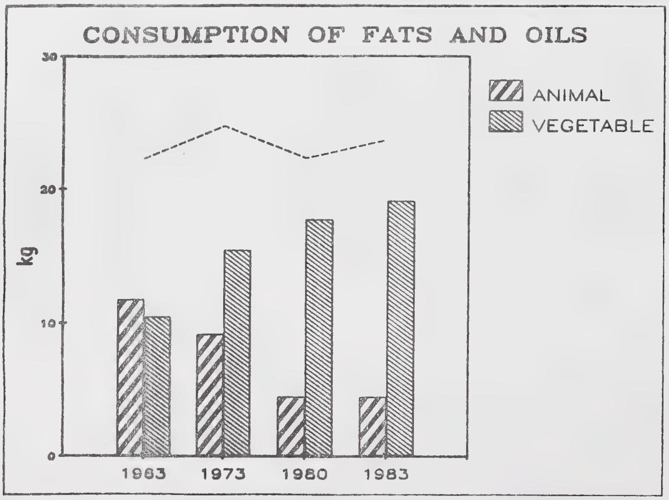
RED MEATS

WHERE IS ALL THE FAT?

1977 - 1985 statistics show an overall trend for consumers to eat less red meat. In spite of this trend, the total fat content of our diet is not declining. Our fat intake remains around 40-42% of our daily calories. As was discussed in the March 1987 newsletter, beef and pork do not contribute a large amount of fat to the diet. So where does all the fat come from?

While red meats, poultry, and fish may not be high in fat, preparation and serving methods often involve the addition of fat (eg. frying, deep fat frying). The use of hot dogs, luncheon meats, sausage and bacon which are higher in fat than fresh red meats has increased. While the use of saturated fats such as butter and lard are declining, the use of shortenings, special margarines, vegetable oils, and salad dressings are on the increase. In 1963 there was about a 50/50 split between animal fats and vegetable oils. In 1983 the picture has changed to a 30/70 split between animal fat and vegetable oil.



This change in the type of fat may be the consumers attempt to select fats promoted to reduce serum cholesterol. The result has been that total fat intake has not been decreased to 35% of calories - only the sources have changed.

TARGETING FOR SMOOTH PIG FLOW

Most hog producers set production targets. These may be written down or just kept mentally. Nonetheless, targeting is important as it initiates a process whereby goals are set for the unit, for the manager, and for the stockmen.

TARGETING PROCESS

Setting targets should always be considered to be a process. A vital first step in this process is setting an output or base target. It must be kept simple and usually reflects the number of weaner pigs, market hogs, or kilograms of pork sold per year. Once established, the targets should be converted to calender weeks.

EXAMPLE: Assume a 100 sow herds wanting to produce 1800 pigs/year

1. Marketing target: 1800 pigs ÷ 52 weeks = 35 pigs sold/week
2. Weaning target: (assume 2.5% death loss -- weaning to market)
   35 pigs X 1.025 = 36 pigs weaned/week
3. Born alive target: (assume 12% pre-weaning mortality)
   36 pigs X 1.12 = 40 pigs born alive/week
4. Litters per week: (assume 10 pigs born alive/litter)
   40 pigs ÷ 10 = 4 litters/week
5. Successful services/week: (assume 80% conception rate)
   4 litters/week : 0.80 = 5 services/week

The targeting calculations can be continued to determine litters per sow per year, boar and replacement gilt requirements, feed requirements, sow and pig space requirements, etc.. All of these targets are the result of the final goal --- in above case producing 1800 market hogs per year.

SMOOTH PIG FLOW

Many hog producers who encounter production or financial difficulty have never taken the time for targeting. Targeting is production scheduling the operation for smooth pig flow and efficiency. Having a definite production plan can eliminate the roller coasters of highs and lows in pig flow.

Good records are an essential in order that current production outputs can be compared to target levels. Without them one never really knows whether target levels are actually being reached.

TIPS IN SETTING TARGETS

- Do not set targets too high. Be realistic.
- Remember there are no absolute standards of performance. Allowances must be made for facilities, etc.
- Always start from an annual production target (i.e. market hogs sold). In order to give better pig flow, adjust output numbers up or sow numbers down.
- Seek advice on whether estimates and assumptions are right and within reach.
- Make sure target output fits the weekly pig flow pattern. Farrowing 4 litters per week fits pig flow and sow space needs better than 4.5 farrowings per week.

SWINE

EXPLORING GROWTH RATES

Growth from a pig's viewpoint is defined as a need to reach mature size. On the other hand, the pig producer views growth as a means to create a saleable product in the fastest and cheapest way possible. Understanding how a pig grows is an important aspect of achieving maximum growth potentials.

COMPOSITION OF GROWTH

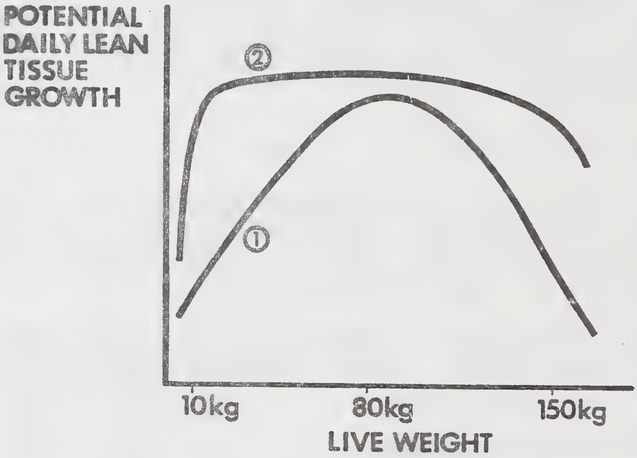
Live weight growth is comprised of accumulation of lean tissue, fatty tissue, and bone. Lean tissue is mostly muscle, whereas fat is mostly in the form of fat storage of which two-thirds is under the skin. The chemical composition of lean is around 70% water, 10% fat and 20% protein. On the other hand, fat is approximately 10% water, 88% fat and 2% protein. This large difference in water content is the reason lean is much more economical to produce than fat.

As pigs grow they get fatter. This of course depends on the amount of food eaten and the stage of maturity. At birth, the pig has only 1% body fat rising up to about 15% by four weeks of age. Stresses at weaning time drop fat stores in the 5-7% range. When appetite returns the pig readjusts fattness toward a target level around 10% of body weight. When food supplies exceeds the requirements for growth of lean, the fat level in the body rises. At six months of age the level may be up to 25% or more.

LEAN TISSUE GROWTH POTENTIAL

The objective for all pig operators should be to secure fast, lean growth. The maximum rate at which a pig will grow lean tissue depends upon the sex and the genetic merit of the animal. Whole body potential lean growth per day has been suggested to be around 0.6 kg for entire males, 0.5 kg for females and 0.4 kg for castrates. Genetically superior pigs selected for fast growth and lean carcasses are also likely to have a higher limit to their potential lean growth.

The possibilities for fast body growth depends on the possibilities for daily lean tissue growth rates. (See Figure). Curve 1 represents lean growth under current commercial conditions. Curve 2 represents what is possible. The pig has an inbuilt desire to drive up to its maximum potential at the earliest opportunity. This ability for the pig to grow is related to the amount of food it eats, not to its liveweight.



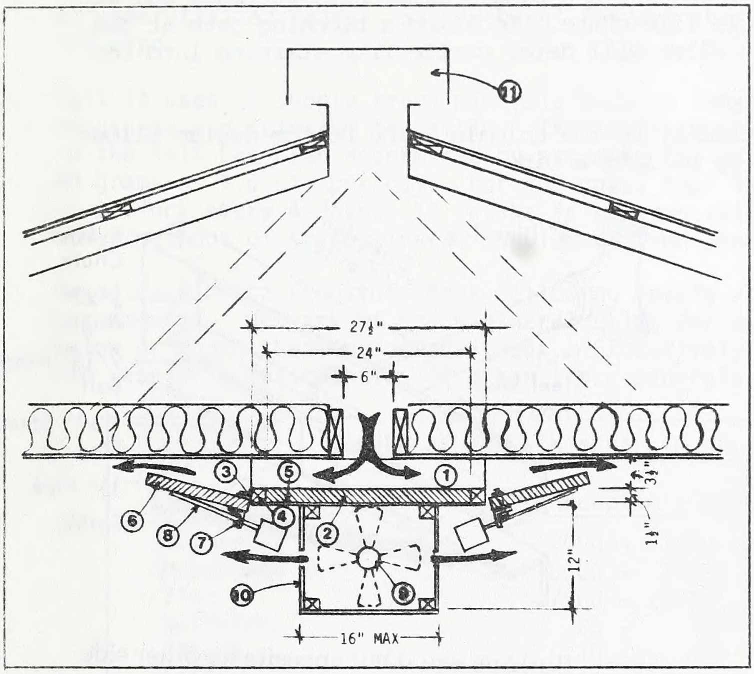
MAXIMIZING PIG GROWTH

Ideally; newly weaned pigs should be eating 500 grams of feed and growing at 500 grams per day. This is about twice the level normally observed under commercial conditions. Key factors in obtaining fast, lean growth are:

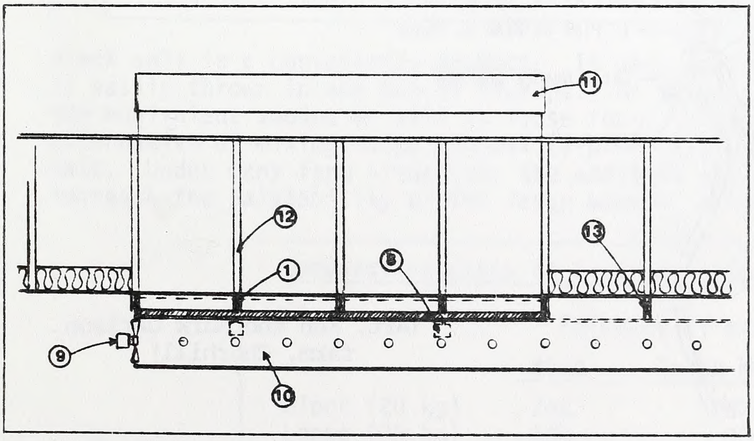
- buying or breeding pigs with good appetites and high lean tissue growth rates.
- providing unlimited high quality feed at all times.
- minimizing environmental stresses.
- minimizing weaning stress which can have disastrous consequences for feed intake.

POWER-ASSISTED SELF ADJUSTING CENTER-AIR INLET

This power-assisted self-adjusting air inlet improves air distribution in barns where a center air inlet is used. As the recirculation air duct is able to mix and uniformly distribute air and as the air inlets are easier to construct in eight-foot segments, the air inlets do not have to be continuous down the entire length of the barn (see side view). Ridge vents (see #11) allow fresh cooler summer air to pass through the attic as directly as possible.



END VIEW



SIDE VIEW

Legend

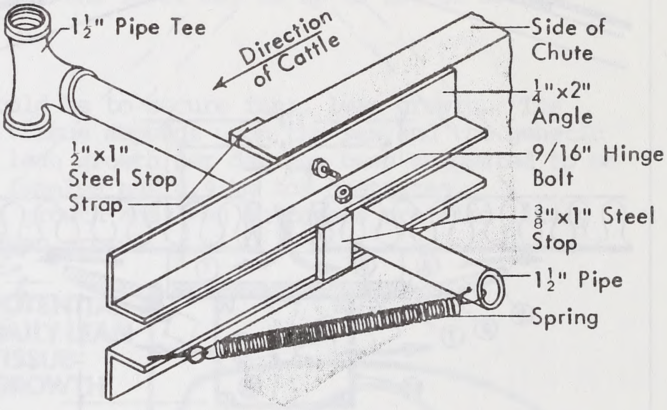
1. 2 X 4's; 27½' long; spaced 24" apart; toe-nailed or bracketed to ceiling.
2. 1½" X 24" wide polystyrene insulation board (length to suit air inlet size).
3. 9" wide strip, fibreglass reinforced "hay" tarp for hinge; wrap around #4.
4. 2 X 2 (wrapped with #3) nailed to #1.
5. 27½" X 3/8" plywood protective sheathing nailed through #2.
6. 1½" X 12" polystyrene baffle.
7. 1½" X 1½" sheet metal angle brace bolted to #6 and pinching #3.
8. 5/16" X 18" threaded rod with 2 lb. weight; 2 per 8' length of baffle.
9. 12" diameter single speed fan with 12" duct; for 100' long tube, 1½" holes, 12" o.c.; for 50' barn 2" holes, 12" o.c.
10. 12" X 16" plywood (or 6 ml. poly) duct.
11. Ridge vent (may be required for hot summer ventilation).
12. Truss rafters.
13. 2" X 6" (cut to 5") framing member between air inlets.

BLOCKING GATES FOR SINGLE FILE ALLEY

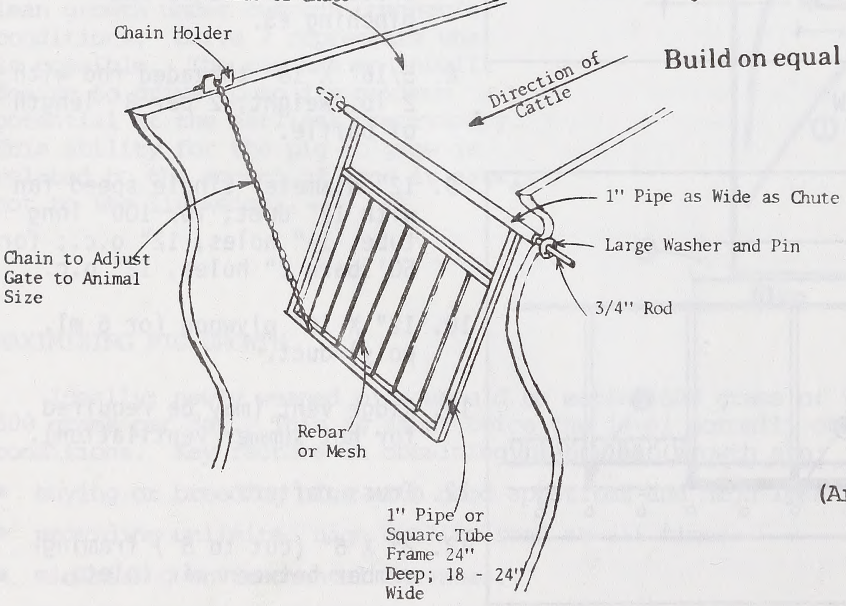
Within a handling corral, there are many locations such as the crowding tub or curved single file alley that require solid sides. The solid sides block shadows and prevent animals from viewing the upcoming squeeze or paths of escape. However, for the blocking gate to work effectively, it must be see through.

A blocking gate prevents cattle from backing up once in the single file alley but does not present a barrier for cattle going ahead. Animals must see through the blocking gate to the animal in front if we expect them to continue following the leader. Blocking gates can be located 2 to 3 feet past the single file chute entrance and at other strategic spots within the single file chute. Locating a blocking gate at the immediate entrance of the single file alley will deter cattle from starting into the alley.

The blocking gates below work automatically by the animals. The bottom design allows cattle to be backed out of the chute by pulling a pin.



Build on equal but opposite for other side.



(Art, Ken and Mark Carlson
farm, Cherhill)

FEEDING SALT

During winter or summer, salt and mineral is usually fed to the beef cow on a free choice basis. We rely on the cows craving for sodium to seek out the salt box. The system works well but there are limitations. Here are some points to consider.

1. Salt intake will vary with season, source of water, level of milk production and form of salt. Cattle will consume more salt in loose than block form. To ensure adequate intake, there should be one salt location for every 40 to 50 cows. Ideal locations would be near the watering area, bedding or loafing area or in the case of pasture, at underutilized areas. Salt/mineral feeders should keep the product dry and out of the wind.

2. Salt is used to supply trace minerals such as cobalt, iodine, copper, zinc, manganese and selenium to cattle. The level at which these trace minerals are added to the salt has been determined by assuming the animals daily salt intake is about 40 grams or 1.5 oz. per day. For 100 cows, that is equivalent to 1 bag every 6 days or 1 block every 4 days. If intake is substantially less than this guideline, then other methods of trace mineral supplementation should be considered.

3. Based on Alberta feedstuffs the following levels of trace minerals in salt are recommended. Be wary of trace mineral salts for cattle containing levels either below or above these recommendations. Excessively high intake of one trace mineral can result in deficiencies of other trace minerals.

LEVEL OF TRACE MINERAL IN SALT

Trace Mineral	Acceptable Range (mg/kg)*
Copper	2000 - 3000 (max 500 for sheep)
Manganese	5000 - 7500
Zinc	7500 - 12000
Selenium	25 - 75 **
Cobalt	40 - 60
Iodine	70 - 100

* Note 1 mg/kg = 0.0001% (e.g. 7500 mg/kg = .75%)

** greater than 25 mg/kg of selenium requires a customer formula feed

4. Block salt is a convenience product. It does not require a container to be fed and is easily thrown in and out of pickups. As such it costs from 15 to 25% more than the equivalent amount of salt in loose form. Block salt does not allow for the alternative of mixing range mineral (1 part calcium to 1 part phosphorus) with loose salt. Under many farm situations the addition of loose salt to range mineral will increase the palatability of the range mineral ensuring better intake.

Comparative Costs of Block vs. Loose Salt

	Price/kg of product	
	Blue	Trace Mineral
Block (20 kg)	24¢	37¢
Loose (25 kg)	21¢	30¢

VACCINATIONS FOR THE BEEF HERD

Along with branding, castrating and dehorning calves, spring activities also include vaccinating the calves and replacement heifers for blackleg. If breeding females require IBR, BVD or vibrio vaccination, best results occur if the vaccinations are done at least 30 days before breeding. Consult your local veterinarian for the necessary vaccinations in your area. The following table summarizes the vaccination procedures for the control of some infectious diseases in western Canadian beef herds.

DISEASE	TIME TO VACCINATE	REMARKS
IBR/PI$_3$	At least 3 weeks before weaning or breeding; at entry into a feedlot within 24 hours of arrival	If calves are vaccinated at 2 to 4 months of age, they should receive a booster at 6 to 7 months of age. Do not vaccinate pregnant animals with the modified live intramuscular vaccines.
BLACKLEG (*A. chauveii*) MALIGNANT EDEMA (*Cl. septicum*) INFECTIOUS HEPATITIS (*C. coryi* type B) ENTEROTOXEMIA (*Cl. perfringens* types B,C,D) TETANUS (*C. tetani*) REDWATER (*C. novyi*); type D	All calves over 2 mo. of age with a booster at 4 to 6 mo. of age. 2-way vaccine — blackleg and malignant edema. 7-way vaccine — all listed at the left except Redwater 8-way vaccine — all listed at the left	All beef cattle should be vaccinated for blackleg and malignant edema. The necessity for the other clostridial vaccines depends on the prevalence of each disease in a particular geographical area.
BVD	Replacement heifers after weaning and before breeding if using a modified live vaccine. *OR* All breeding females annually with killed vaccine prior to breeding.	The modified live vaccines must not be used in pregnant animals. Necessity for vaccinating feedlot cattle does not appear high.
VIBRIOSIS	Heifers require two vaccinations at 6 and 3 weeks prior to breeding. Cows require annual booster 3 weeks prior to breeding.	Vaccine does not appear to be of value in breeding bulls.
ITEME	Vaccinate calves 3 weeks prior to weaning and again at weaning.	Booster shot required for protection.
PASTEURELLA	Vaccinate calves 3 weeks prior to weaning and again at weaning.	Booster shot required for protection.
BACTERIAL SCOURS	First-calf heifers require two vaccinations, at least 3 weeks apart, the second 3-6 weeks prior to calving. Cows require an annual booster 3-6 weeks prior to calving.	If management is not optimal, vaccines are of little value.

(Adapted from Ollis, 1987, Disease Control Calendar for a Beef Herd, Agdex 420/622-1)